ENGINEERING NEWS-RECORD

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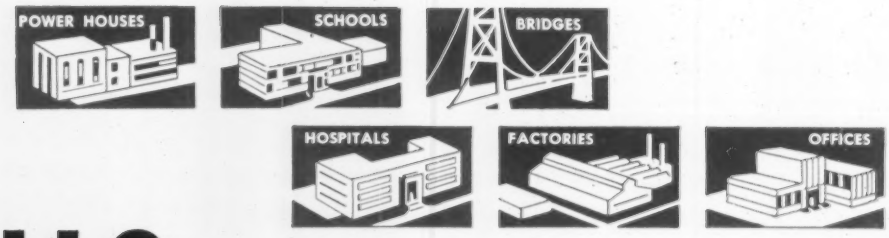
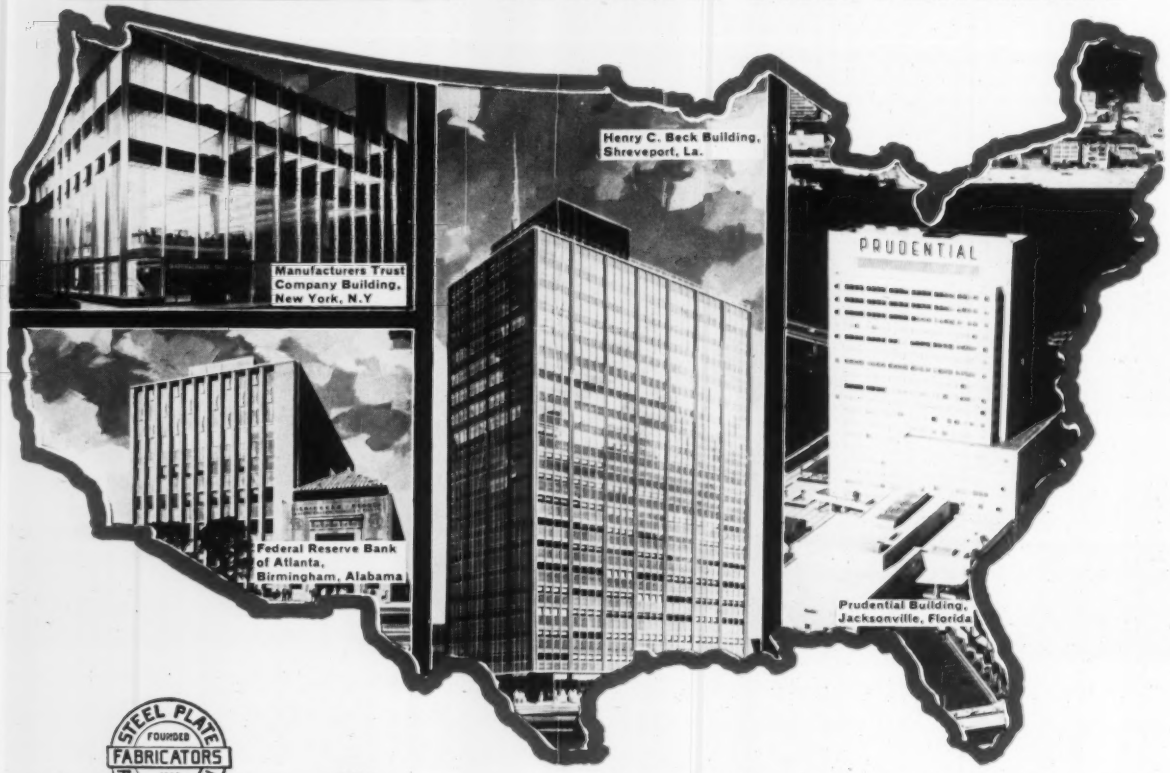
A McGRAW-HILL PUBLICATION



INGALLS: Structural Steel Fabricators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STEEL PLATE FABRICATORS ASSOCIATION — FOUNDED 1933

AISC — AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. — FOUNDED 1921

Modern building design requires that structural members combine great strength and rigidity with ease of erection—at low cost. More and more designers and engineers are specifying fabricated structural steel to meet these important requirements.

Ingalls is a specialist in fabricating structural steel. With facilities to meet every modern requirement for fabricated structural steel, long experience, and a proven record of service, Ingalls stands ready to serve you.

If your company is planning a building which must combine strength, beauty and economy, Ingalls can serve you. Your inquiry is invited.

THE
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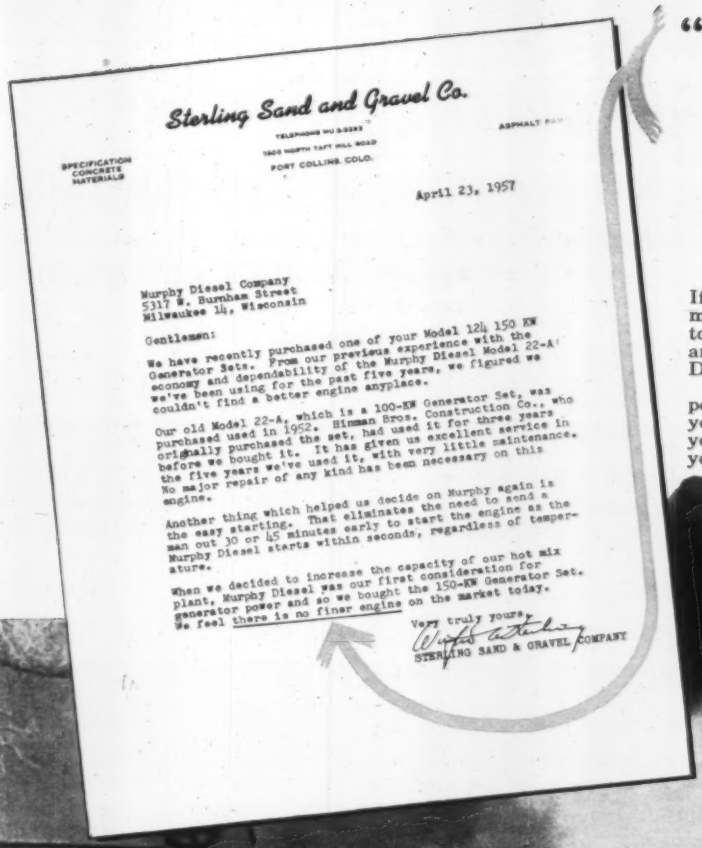
"There is no finer engine than MURPHY DIESEL"

If you're looking for dependable power with maximum operating economy, it will pay you to profit by the experience of so many other pit and quarry operators who have found Murphy Diesel to be "the finest engine on the market."

Talk over your requirements for engines, power units or "packaged" generator sets with your Murphy Diesel Dealer. Ask him to show you how trouble-free Murphy Diesels can help you increase profits.



Sterling Sand and Gravel Co.

TELEPHONE NU 2-2222

1905 NORTH TAFT HILL ROAD

FORT COLLINS, COLO.

SPECIFICATION CONCRETE MATERIALS

ASPHALT PAV

April 23, 1957

Murphy Diesel Company
5317 W. Burnham Street
Milwaukee 14, Wisconsin

Gentlemen:

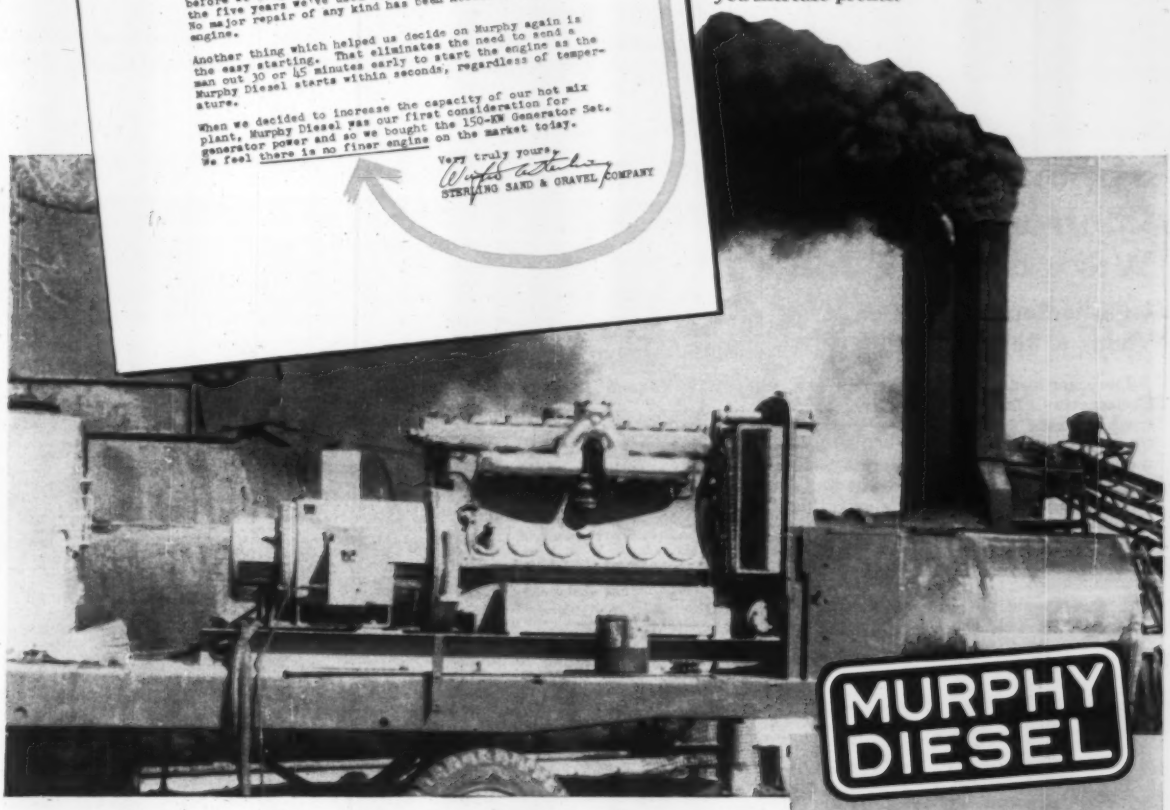
We have recently purchased one of your Model 12½ 150 KW Generator Sets. From our previous experience with the economy and dependability of the Murphy Diesel Model 22-A we've been using for the past five years, we figured we couldn't find a better engine anyplace.

Our old Model 22-A, which is a 100-KW Generator Set, was purchased used in 1952. Hinman Bros. Construction Co., who originally purchased the set, had used it for three years before we bought it. It has given us excellent service in the five years we've used it, with very little maintenance. No major repair of any kind has been necessary on this engine.

Another thing which helped us decide on Murphy again is the easy starting. That eliminates the need to send a man out 30 or 45 minutes early to start the engine as the Murphy Diesel starts within seconds, regardless of temperature.

When we decided to increase the capacity of our hot mix plant, Murphy Diesel was our first consideration for generator power and so we bought the 150-KW Generator Set. We feel there is no finer engine on the market today.

Very truly yours,
STERLING SAND & GRAVEL COMPANY



HEAVY-DUTY POWER for Construction

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

MURPHY DIESEL COMPANY

5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

378 N

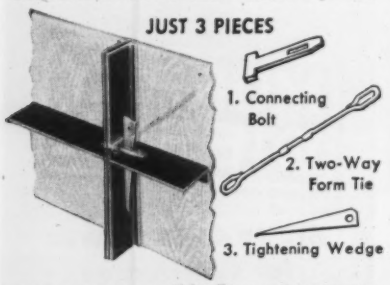
Commercial Forming

Symons Forms Help Contractor Speed Work on Bank Job

Used to Pour Foundation, Vaults & Retaining Walls

Designer and builder, Western Bank Contractors, Inc., Kansas City, Mo., used concrete to provide new look for banking in Kansas City. 4,000 square feet of Symons Steel-Ply Forms were used to speed construction of the foundation, vaults & retaining walls on this new $250,000 Community State Bank of Kansas City, Mo.

Initial cost of Symons Steel-Ply Forms is higher than Wood-Ply Forms, but this is more than offset by the



many reuses possible. Low-cost-per-use plus easier handling and stacking are reasons for the increasing demand.

Symons Steel-Ply Forms can be rented with purchase option. Steel-Ply Form Catalog FREE upon request.

Symons

SYMONS CLAMP & MFG. CO.

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Chicago 39, Illinois

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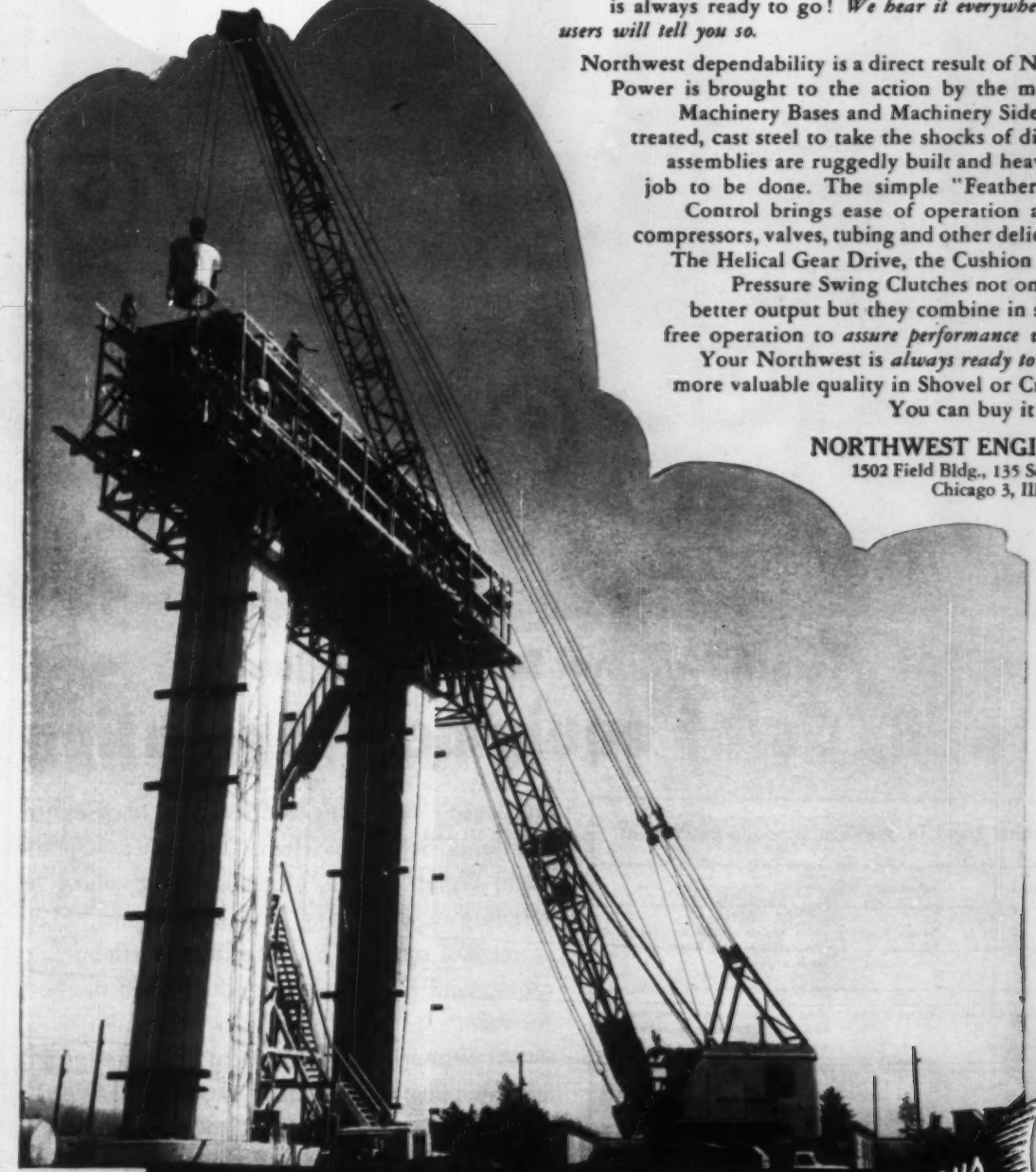
ALWAYS READY TO GO!

THERE IS NO MORE VALUABLE QUALITY IN SHOVEL OR CRANE EQUIPMENT!

No other single advantage of Northwest equipment has resulted in so many repeat orders. Your Northwest is always ready to go! *We hear it everywhere and Northwest users will tell you so.*

Northwest dependability is a direct result of Northwest design. Power is brought to the action by the most direct route. Machinery Bases and Machinery Side Frames are heat treated, cast steel to take the shocks of digging. Parts and assemblies are ruggedly built and heavy enough for the job to be done. The simple "Feather-Touch" Clutch Control brings ease of operation and is free from compressors, valves, tubing and other delicate mechanisms. The Helical Gear Drive, the Cushion Clutch, Uniform Pressure Swing Clutches not only play a part in better output but they combine in smooth, trouble-free operation to *assure performance when it is needed.* Your Northwest is *always ready to go!* There is no more valuable quality in Shovel or Crane Equipment. You can buy it in a Northwest.

NORTHWEST ENGINEERING CO.
1502 Field Bldg., 135 South LaSalle St.
Chicago 3, Illinois



NORTHWEST *Always Ready to* **GO**

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

At Western National School, they learn

the A, B, C's of equipment operation

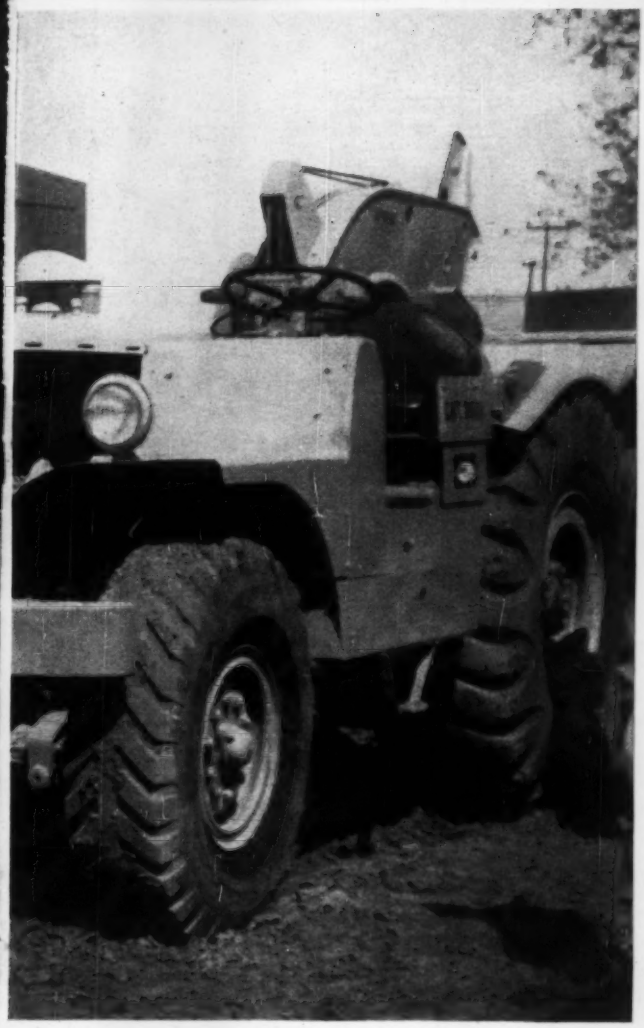
Lubricants Used in Western School's Equipment

Application	Lubricant	
Engine lubrication	Texaco Ursa Oil Super Duty Special	Makes engines deliver more power with less fuel over longer periods between overhauls
Chassis, wheel bearings and general grease lubrication	Texaco Marfak	Stays in the bearings; gives long-lasting extra protection against wear and rust
Track rolls	Texaco Track Roll Lubricant	Seals itself in, seals out dirt and moisture.
Hydraulic units	Texaco Regal Oil R&O	Keeps systems free from rust, sludge and foam
Wire rope and open gears	Texaco Crater	Keeps wire rope strong longer, assures smoother operation and longer gear life
Enclosed reduction gears	Texaco Gear Lube HD	Protects against wear under heavy loads, keeps gears running smoothly.

It doesn't take long for students at Western National School of Heavy Equipment Operation, Weiser, Idaho, to realize there's more to grading or bulldozing than moving dirt. They soon find out that a contractor's earth-moving equipment is expensive—and requires the best of care.

At Western, the fundamentals of equipment maintenance are drilled into every student. Among other things, students learn that good lubrication practice usually involves only a few well-chosen lubricants. In fact, the school itself maintains a highly efficient lubrication program by using only six Texaco products for all major lubrication—and using them exclusively.

Because of this training, Western graduates



FIRST DAY OF SCHOOL at Western begins with a look at the equipment students will operate. Western offers 4-week courses in the operation and care of graders and tractors and an 8-week course for cranes—plus a special 8-week course on construction equipment maintenance and repair.

WESTERN NATIONAL'S EQUIPMENT, valued at nearly $250,000, moves all kinds of dirt, day after day and in every kind of weather. School relies on Texaco fuels and lubricants exclusively to keep equipment operating "like new."

MAINTENANCE INSTRUCTION is an important part of Western's curriculum. Students get plenty of classroom and night work but spend two-thirds of their term in the field under the supervision of competent, experienced instructors.

and maintenance

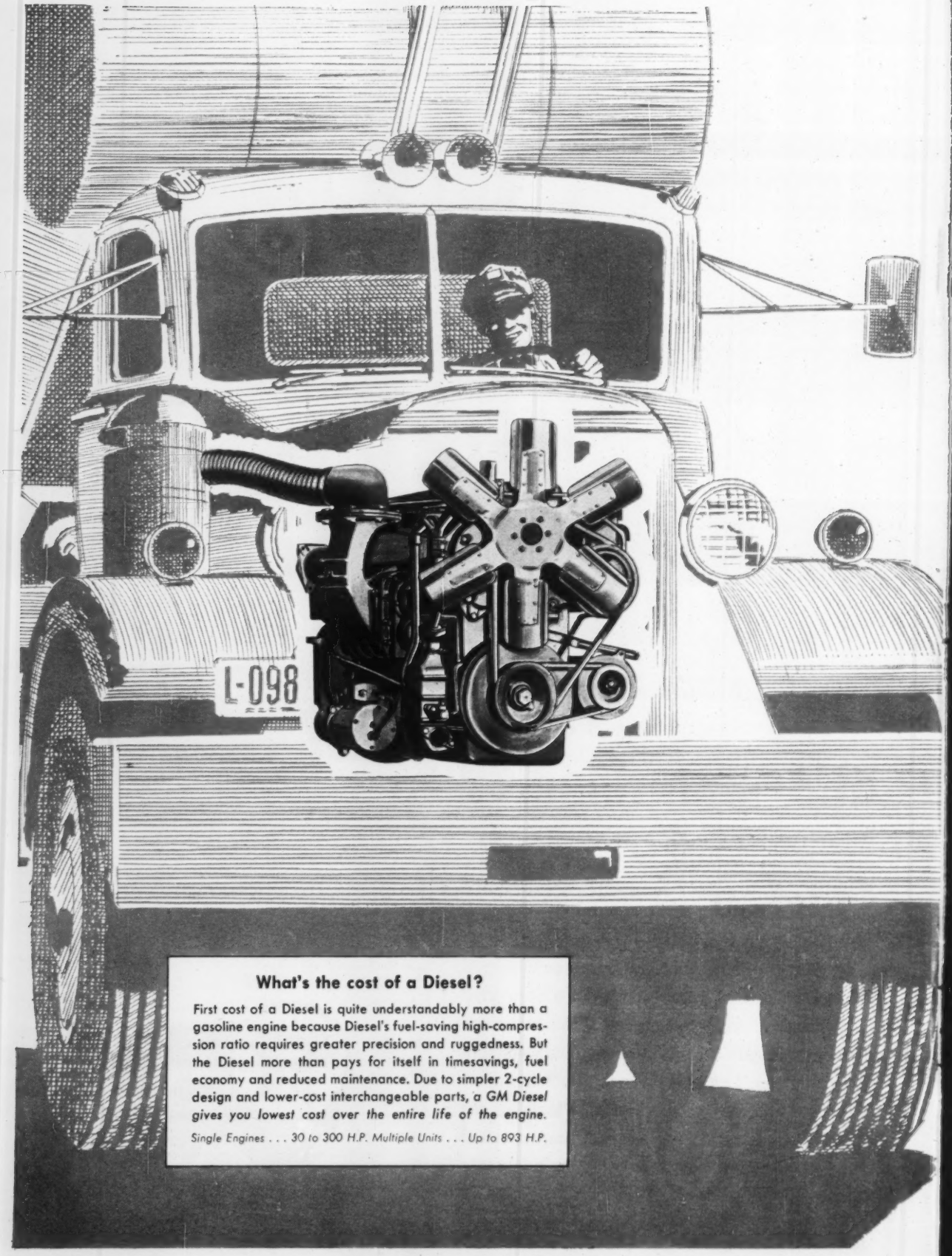
make good all 'round operators of graders, scrapers, cranes and tractors—the kind who can handle and care for your equipment properly, and keep it on the "go."

A Texaco Lubrication Engineer helped Western National School work out a Simplified Lubrication Plan for its diversified equipment. He can help you set up an economical, efficient program, too. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN... Metropolitan Opera Radio Broadcasts Every Saturday Afternoon

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)



What's the cost of a Diesel?

First cost of a Diesel is quite understandably more than a gasoline engine because Diesel's fuel-saving high-compression ratio requires greater precision and ruggedness. But the Diesel more than pays for itself in timesavings, fuel economy and reduced maintenance. Due to simpler 2-cycle design and lower-cost interchangeable parts, *a GM Diesel gives you lowest cost over the entire life of the engine.*

Single Engines . . . 30 to 300 H.P. Multiple Units . . . Up to 893 H.P.

This new "Jimmy" Diesel is the pullingest engine ever hitched to a load

New GM "71E" Diesel is available for any make truck 26,000 GVW and up—produces higher torque at lower speed

A General Motors 2-cycle Diesel not only moves loads up grades faster, *but even outperforms engines more than half again its size.*

That's because *every* cylinder delivers power *every* revolution of the crankshaft—*twice* as many power strokes per crankshaft revolution as 4-cycle Diesels. This makes a "Jimmy" Diesel more powerful for its size, smoother running, faster accelerating.

In addition, the new "6-71E"* engine develops a full 577 foot-pounds of torque at 1200 rpm—*gives you higher torque at lower speed for greater pulling ability.*

More Work—Less Down-Time

Equally important, the "Jimmy" Diesel has the simplest, most efficient fuel injection of any Diesel. Patented unit injectors feed fuel into cylinders under high pressure in exactly metered, precisely timed charges. They eliminate complex fuel pumps and high pressure lines—making GM Diesels far easier and cheaper to maintain. This—plus the new "E" engine's highly improved "breathing" with *four* exhaust valves per cylinder and bigger air inlet ports—assures more complete combustion, faster response to throttle, improved fuel economy and cleaner exhaust.

Leading highway haulers who have used this new "71E" engine report outstanding fuel mileage and reduced upkeep compared with other Diesels they operate and major savings over gasoline engines they have replaced.

See your GM Diesel distributor about repowering your present equipment. When you're in the market for new trucks, ask for this great new GM "71E" Diesel. And if the truck you choose isn't immediately available with a "Jimmy," turn your truck over to the GM Diesel distributor for a "71" installation. *Write for free copy of six-page illustrated brochure on these new GM Diesel Truck Models.*

*6-71E—210 h.p.; 4-71E—140 h.p. New Turbopower models deliver higher horsepower: 6-71T—236 h.p.; 4-71T—171 h.p.

DETROIT DIESEL
Engine Division of General Motors, Detroit 28, Michigan
In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
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New York, Atlanta, Detroit, Chicago, Dallas, San Francisco

Now—more than ever—*it pays to standardize on GM Diesels*

GM
GENERAL MOTORS
DETROIT DIESEL POWER

—available in 1485 applications of power equipment built by more than 175 manufacturers

Parts and Service *Worldwide*

LOADER with a LIFT . . .

. . . gives you an economical one-machine answer for many construction, maintenance and material handling problems.

Yes . . . the new SUPERIOR-HOUGH side boom attachment on a "PAYLOADER" tractor-shovel really increases its all-around usefulness. It *adds* a handy "lift-and-carry" facility to the customary loader operation and, because the boom is side mounted, the machine can alternate *at any time* between boom and bucket work without taking time to change attachments.

Available on the big HO "PAYLOADER", the 10-ft. boom lifts up to 6,000 lbs., telescopes to 16-ft. maximum length. Big rubber tires walk and work over sidewalks and curbs without damage; 4-wheel-drive with power transfer differentials insure ample traction for cross country work.

A nearby Hough Distributor will gladly demonstrate the "PAYLOADER" with this versatile side boom. Also ask him about other useful attachments (black top spreader, back hoe, "4-in-1" bucket) and the wide choice of financing plans he can offer in "Hough Purchase and Lease Plans." The Frank G. Hough Co., 772 Sunnyside Ave., Libertyville, Ill.

SAY "HUFF"

Modern Materials Handling Equipment

THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

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Send full PAYLOADER® data on

- Four-wheel-drive types —up to 9,000 lb. carry cap.
- Rear-wheel-drive types —up to 2,000 lb. carry cap.
- Front-wheel-drive types —up to 2,000 lb. carry cap.
- Model HO w/Side Boom

Name

Title

Company

Street

City

State

2-B-5 ENR

Reader Comment

Dutch "Linked Tunnel"

SIR—The article on a "new method of trench-type tunnel construction" (ENR Jan. 23, 1958, p. 56) was of particular interest to the writer, since it describes a method of construction closely similar to that investigated by the firm of Parsons, Brinckerhoff, Hall & Macdonald some ten years ago in cooperation with Pieux Franki Company of Liege, Belgium. These methods were described by the writer at a conference on prestressed concrete at Newark College of Engineering, April 8, 1953; the paper was subsequently translated into French and published by "LA TECHNIQUE DES TRAVAUX" of Liege, Jan.-Feb. 1954, p. 61.

The method studied by this firm involved the substitution of a prestressed thin concrete cylinder in place of the watertight steel shell which has generally been used in the United States. It differs from the Dutch method described in your article in that the six-inch concrete shell is located on the outside of the structural tube forming the tunnel instead of on the inside. Moreover, in our study, we proposed to prestress the concrete shell of each 15-ft. section by wrapping it circumferentially with steel wire under tension, instead of prestressing each tube section "vertically" (or longitudinally in its final position). Our plan also provided longitudinal prestressing cables installed on the inside of the concrete shell, after the individual tube sections were assembled into 300-ft. long tubes for installation under water.

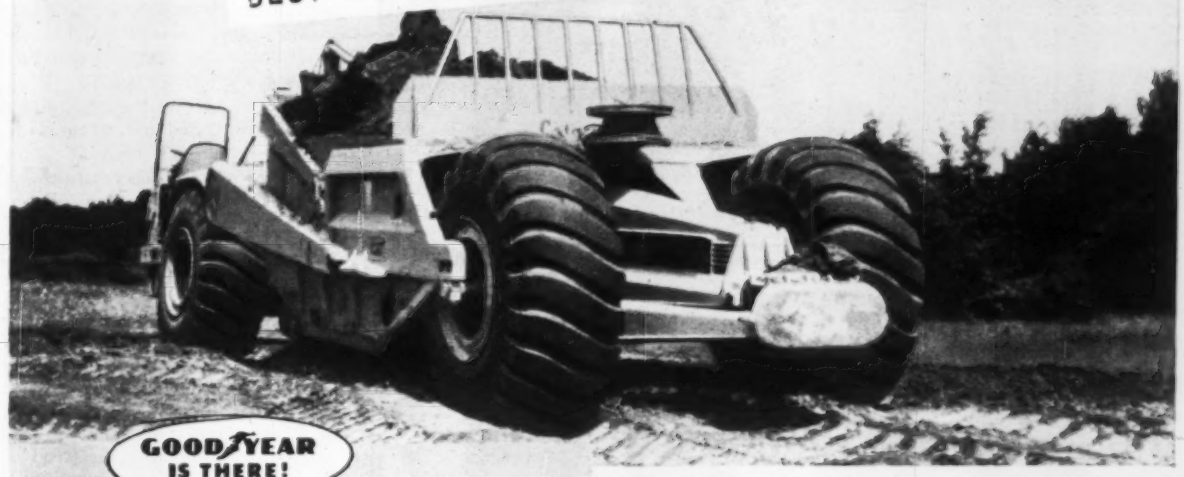
In our studies, for the conventional type of steel-plate tubes, we had considered the possibility of locating the steel shell on the inside of the structure instead of on the outside. But this arrangement was abandoned since it would have required providing additional space inside the shell for the required control boxes, niches, etc., thereby requiring an increase in the outside diameter of the tunnel. The same requirement would also apply to a prestressed concrete design.

The circumferential prestressing of

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

ROAD-BUILDING VETERAN PROVES

BEST EQUIPMENT, WELL MAINTAINED, PAYS OFF BEST



▲ MILLION-DOLLAR ARRAY of equipment like this takes $7,000,000 relocation job on U. S. 21 in stride. This is just one of the many highway and airport grading and paving projects in Frank Mashuda Company's long and successful history. Tires shown are wide-base 3-T Nylon Hard Rock Lug by Goodyear.

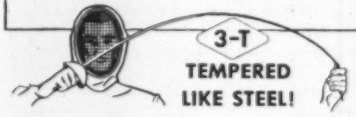
◀ TYPICAL ON-JOB SETUP includes huge Quonset maintenance center and 2-way radio facilities. All vehicles and tires are kept in A-1 working condition at all times, on every job—and when no longer needed are returned to central maintenance center for general inspection and reconditioning. This has paid off, through the years, in one of the lowest down-time overheads in the industry.

Tires move more yards for less

when built with **Triple-Tough 3-T Nylon Cord!**

ALL 3-T NYLON CORD—*Tubeless or Tube-Type*

HARD ROCK LUG | SURE-GRIP LUG | ALL-WEATHER EARTHMOVER



Like steel, tire cord must be *tempered* to be tough. Goodyear's exclusive 3-T process, involving Tension, Temperature and Time, *triple-tempers* cord to make it TRIPLE-TOUGH—to give you longer tire life, lower cost-per-mile.

Known as *"the greatest tire SAVER in 23 years,"* Triple-Tough 3-T Nylon Cord is a Goodyear exclusive.

During years of use, on the toughest jobs on earth, Goodyear 3-T Nylon Cord tires have literally saved *millions* for contractors and truckers who realize that the final cost of any tire depends entirely on *what they get out of it.*

The fact that more tons are hauled on Goodyear tires than on any other kind, certainly suggests that most operators get more yards-per-dollar, more miles-per-dollar, on Goodyears. If *you're* not already using Goodyear 3-T Nylon tires on your equipment, try them! Goodyear, Truck Tire Dept., Akron 16, Ohio.

Buy and Specify

GOODYEAR

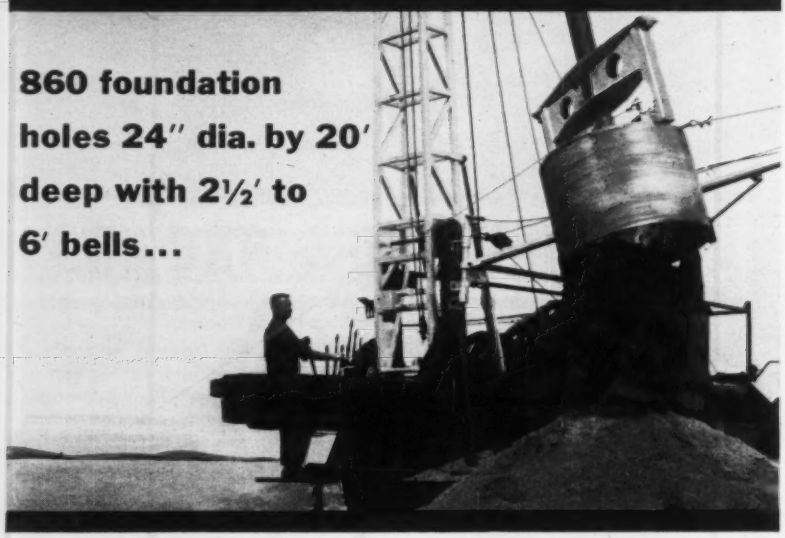
MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

NEW SPEED RECORD!

Calweld digs 12 caissons a day

and bells the bottoms!



860 foundation holes 24" dia. by 20' deep with 2½' to 6' bells...

AT ⅓ THE COST of constructing conventional spread footings, six Calweld Earth Drills recently dug 860 holes for drilled-in-place caissons—at speeds up to 12 complete caissons per rig per day! Hitting a record smashing day's rate of 74 completed drilled-in-place caissons, the six rugged Calweld rigs rang up 641 completions in only 14 days!

Performing under adverse conditions, frequently in frozen ground, the Calweld Earth Drills dug 20-foot holes 24 inches in diameter... belled the bottoms from 2½ to 6 feet... placed reinforcing steel cages in all holes... placed steel casings in 25% of the holes... and pulled the casings after concrete was poured.

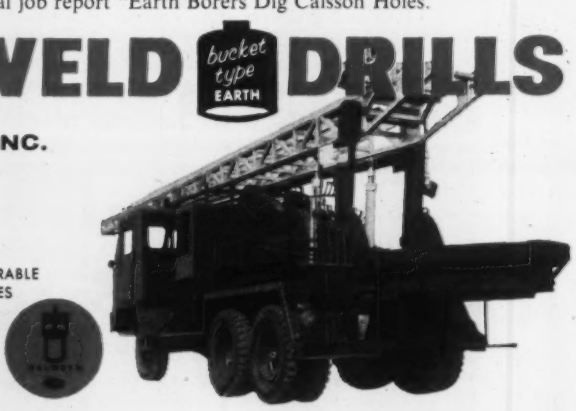
This outstanding performance is typical of what Calweld Earth Drills can do for you. They can drill any size hole from 10" to 10' in dia. to a depth of 200'.

Write for factual job report "Earth Borers Dig Caisson Holes."

CALWELD bucket type EARTH **DRILLS**

CALWELD, INC.
7222 East Slauson Ave.,
Los Angeles 22, Calif.

MOBILE AND MANEUVERABLE
DRILLS 10" to 120" HOLES
200 FEET DEEP



. . . Reader Comment

the tube was primarily intended to increase in watertightness. The longitudinal prestressing was considered necessary to hold the assembled sections together as a unit, as they are sunk into place under water; also to provide adequate strength to resist longitudinal moments in case of settlement. It appears to the writer that the longitudinal prestressing of individual sections described for the Dutch method is unnecessary and in no way a substitute for circumferential prestressing.

The efforts taken in the Dutch design to provide structural separation of the initial concrete shell from the exterior concrete layer will involve difficult problems of structural analysis. In our studies, we proposed to place in the same manner as with a steel-plate shell.

The studies described herein were made in connection with design of a tunnel under the Riachuelo River at Buenos Aires, Argentina, and another tunnel proposed under the Guaiba River at Porto Alegre, Brazil. The designs were not carried through to completion; and so far as the writer knows, the use of prestressed concrete in construction of a tunnel by the precast-and-trench method is actually an untried field. The description of the Dutch method in your article is too condensed to permit an adequate appraisal of its feasibility, although the writer doubts whether it would be as economical as the method studied by us.

The economic advantage of prestressed concrete shells over steel construction would vary considerably in different countries and might be completely lost or reversed.

It would be helpful if the editor would furnish the source of the information as published.

H. Alden Foster
Principal Associate
Parsons, Brinckerhoff, Hall & Macdonald
New York, N. Y.

CALENDAR

National Council for Stream Improvement (of the pulp, paper and paperboard industries), annual meeting, the Waldorf-Astoria, New York, N. Y., Feb. 17-20.

American Concrete Institute, annual convention, Morrison Hotel, Chicago, Ill., Feb. 24-27.

American Society of Civil Engineers, Chicago convention, Hotel Sherman, Chicago, Ill., Feb. 24-28.

Building Research Institute, Plastics Study Group meeting, University of Houston, Houston, Tex., Mar. 5-6.

American Concrete Pipe Association, 50th annual convention, Roosevelt Hotel, New Orleans, La., Mar. 9-13.

American Railway Engineering Association, annual meeting, Sherman Hotel, Chicago, Ill., Mar. 11-13.

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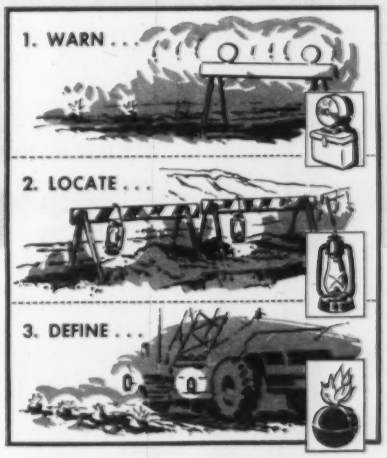

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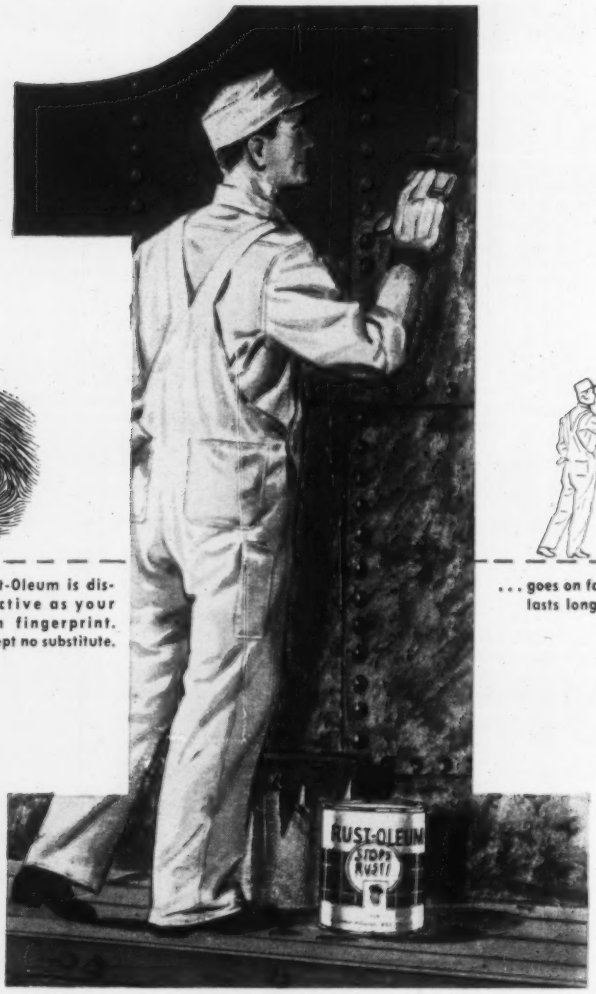

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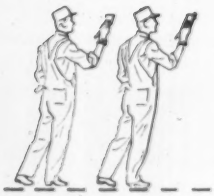

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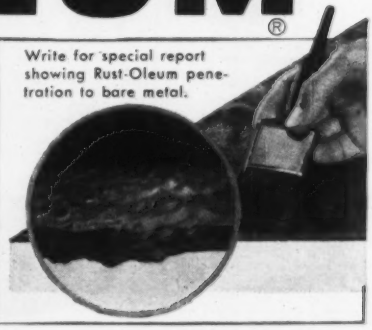

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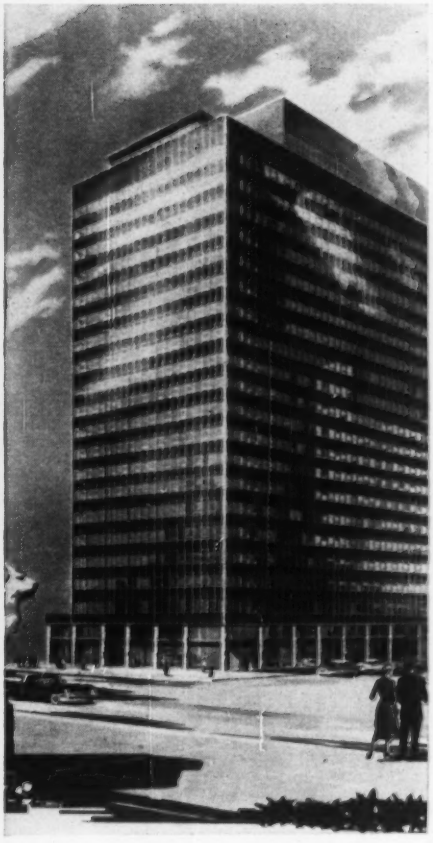

Borg-Warner Building, Chicago. A. Epstein & Sons, Inc., architects and engineers. William Lescaze, consultant. George A. Fuller Company, General Contractor.

PIONEERING A NEW IDEA...

A. Epstein & Sons Specifies Alloy Re-Bars from Ryerson for Chicago Office Building

Alloy steel reinforcing bars welded together end to end into continuous bands of steel are used in the beautiful new 23-story Borg-Warner Building now going up on Michigan Avenue in Chicago.

As a result, the firm of A. Epstein & Sons, Chicago architects and engineers of the building, was able to reduce the size of columns in the reinforced concrete framework of the building by almost 25% with no sacrifice in strength. Ryerson spent weeks developing techniques that would assure necessary weld strength and is supplying and fabricating the steel for this pioneering construction project.

Alloy steel reinforcing bars, as well as carbon steel bars, can be supplied by the Ryerson plant near you. On-time delivery, accurate forming and accurate marking are always part of Ryerson re-bar service. Let Ryerson work with you on your next construction job.

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THE CONSTRUCTION WEEK

NORTHWEST POWER STIRRINGS—The fog over hydro power development in the Pacific Northwest created by the Federal Power Commission turndown of the Mountain Sheep-Pleasant Valley Project on the middle Snake (ENR Jan. 30, p. 24) has not begun to lift yet, but there were some notable stirrings and rumors last week. Wanapum Dam, sister of the Grant County (Wash.) PUD's Priest Rapids Project on the mainstem Columbia, was thought likely to get under way this year as a result of the FPC action on the Snake. And there was considerable speculation that Pacific Northwest Power Co., encouraged by FPC's optimistic attitude concerning moving fish downstream past high dams, would go after the FPC-recommended high dam at Nez Perce in lieu of its Mountain Sheep-Pleasant Valley duo.

ILLEGAL FEE—A Colorado District Court has ruled as illegal, a $125 "school fee" charged builders before they could secure homebuilding permits. Commissioners of Arapahoe County, a Denver suburb, placed the law in effect in 1955 to provide funds for acquisition of school sites and school construction in the county. Approximately 1,400 of such fees were paid and under the ruling close to $200,000 will be refunded. The money collected had been placed in escrow pending the court decision. Judge Martin Miller said that county government in Colorado is not a legal body at common law and has the right only to collect such fees and taxes as empowered through the state constitution or the legislature. The school fee was not so authorized.

UTILITY REIMBURSEMENT FACES CONTROL—Congress is faced with a new proposal, apparently carrying the backing of the Eisenhower Administration, to cut down on federal help for utility relocations in the highway program. Senator Case of South Dakota has introduced a bill under which the federal contribution to states reimbursing the utilities would be limited to a flat 50%. He says the measure closely follows recent recommendations by Secretary of Commerce Sinclair Weeks. Rep. Robert E. Jones of Alabama proposed legislation earlier which would forbid the use of any federal funds for reimbursement of relocation costs.

ON PAY, SCIENCE AND SPACE—The National Society of Professional Engineers, meeting in East Lansing, Mich., last week, had three major recommendations for the federal government: (1) increase pay for engineers and scientists in federal employ; (2) help to improve science education; (3) create a space exploration commission, a civilian authority comparable to the Atomic Energy Commission.

SO HANDY

"Handy", the dictionary says, means "convenient for use". No three words better describe Penn-Dixie "One-Package" Mortar Cement. Just add sand and water and you're ready for any masonry job in the book.

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WASHINGTON OBSERVER

- **Administration talks up confidence**
- **School construction gets new life**
- **Highway financing lid opposed**

● **President Eisenhower's "chins up" campaign to reassure business is growing.** The President's formal look-see at employment last week, and at housing over the weekend, will be continued in other areas that have a big impact on the economy. The design of the White House is to offset pessimism.

It could get stuck on the prediction that employment will rise. The President is in an exposed-flank situation—if March unemployment figures do not support the "beginning of the end" of the downturn, then he will be open to Democratic charges of "complacency." And he is competing against a seasonal factor—there should be less people out of work then; but the questions his critics will ask are: How is factory employment doing? How is construction employment doing?

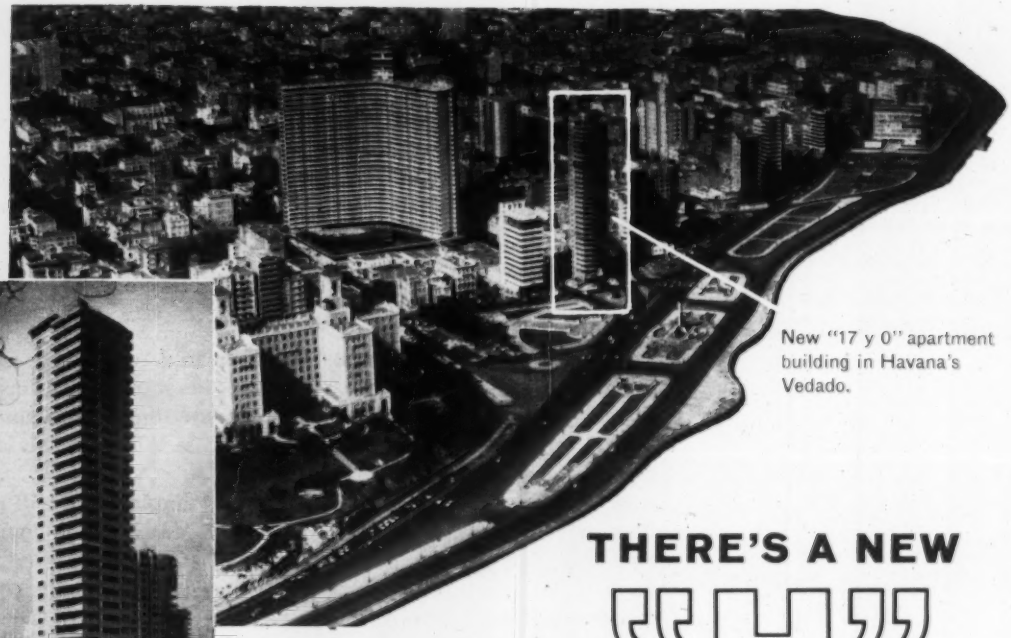
Construction employment dropped between December and January. The figures: 2,838,000 working in December; 2,570,000 in January. Even though this is the off-season period for construction, the figures are not heartening. The pessimists argue that the bounce isn't there though highway and housing activity are firming; and the bad weather still at hand will delay further any improvement.

So talk of cutting taxes and expanding public works grows. In Congress the move is for cuts on individual incomes to date, but there are more people talking even of reducing the 52% corporate income rate. Serious consideration will start sometime after President Eisenhower's mid-March date for first signs of an upturn.

● **Pushers of federal school construction spending aren't giving up.** They see the current business softness as good climate for a program. The President's education program in January dropped the plan for federal aid; instead President Eisenhower concentrated on scholarships for scientific education, and for better training of instructors. But now, the brick-and-mortar idea is getting a new backing.

Senator Case of New Jersey is the author of the new try, and he has backing from Democrats as well as many eastern Republicans. The big issue of integration still is a major problem for the program, but backers feel they will be able to overcome it should the business decline continue.

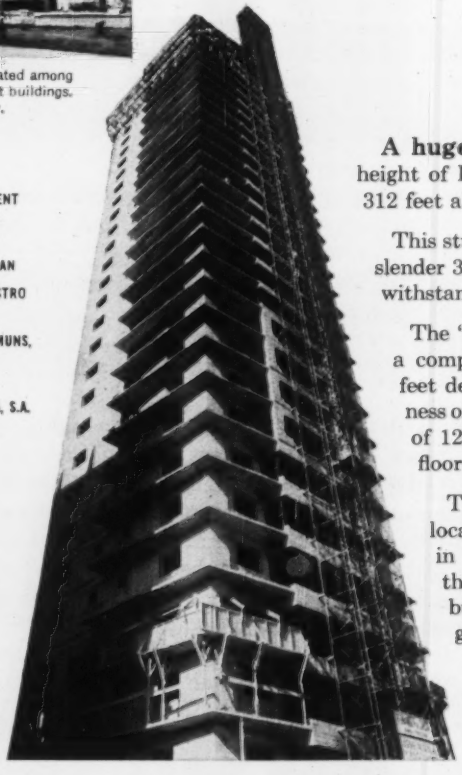
● **Schemes for getting highway money out faster are collecting.** The latest: Take off the ceiling of the so-called Byrd pay-as-you-go fiat. When the program went to trust fund financing—from fuel, tires and other transportation taxes—Congress directed that no more could be spent than had been collected for any given period. Now the plan, encompassed in legislation backed by Democratic leaders, but also the same idea is being circulated within the Administration, is to take off the lid. One elaboration: to have the Treasury issue bonds against trust fund revenues, in order to get more money earlier.



New "17 y 0" apartment building in Havana's Vedado.

Completed building seen above, situated among other new apartment and government buildings. (At right) dramatic construction view.

THERE'S A NEW "H" IN HAVANA



A huge "H" beam extends upward the entire height of Havana's newest luxury apartment building, 312 feet above sidewalk level.

This sturdy diaphragm forms the "backbone" of the slender 32-story structure and is carefully designed to withstand wind stresses due to hurricanes.

The "H" beam is built of reinforced concrete with a compressive strength of 5000 psi. Measuring 55 feet deep, with 60-ft. flanges and a variable thickness of web, it is constructed to resist wind pressures of 120 mph at lower levels to 180 mph on upper floors.

The building, known as "17 y 0"—its street location—towers above historic Malecón Drive in the famous Vedado section. It exemplifies the dramatic beauty of the many new modern buildings designed in concrete along Havana's growing skyline.

A total of 11,000 bbls. of El Morro Cement, produced by La Compañia Cubana de Cemento Portland, Lone Star subsidiary, were used in the project.

"17 y 0" COOPERATIVE APARTMENT BUILDING
Vedado, Havana, Cuba

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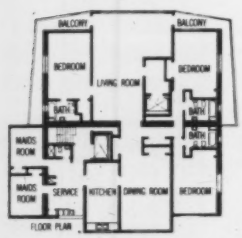
Architect: **FERNANDO R. de CASTRO**

Engineers:
J. A. VILA, B. DESCHAPELLES, A. MUNS, R. GUTIÉRREZ

Contractor:
CONSTRUCTORA METROPOLITANA, S.A.



Huge reinforced concrete "H" beam forms the backbone of the structure.

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At AGC's meeting in Dallas —

- **Unions are asked to give a day's work for a day's pay**
- **Labor expresses its intent to boost productivity**
- **Congress is asked to give tax relief on depreciation**
- **The buyer's market in equipment is an unprogrammed topic**
- **Speakers paint a rosy picture of '58 construction business**

Builders Air Problems Amid Optimism

Out of the Associated General Contractors' 39th annual meeting in Dallas last week came this plea:

Wanted—more productivity and less featherbedding, better bargaining between management and labor, corrective legislation at the state and national levels to give the average contractor tax relief on his equipment depreciation and federal action to insure more orderly construction in the heavy and highway construction fields.

But the concern over such matters was expressed along with rosy predictions for the future in the contracting business.

• **Contractors demand**—On the controversial issues of labor relations and productivity, critical and constructive opinions were expressed by leaders of labor and the construction industry. AGC's outgoing president, Lester C. Rogers, of Bates & Rogers Construction Corp., threw down the gauntlet by demanding that the building and construction trades unions "give the public a full day's work in return for a full day's pay."

As spokesman for the more than 7,000 AGC-represented general contractors (who do more than 80% of all contract construction in the United States) Mr. Rogers' remarks were of considerable import. He reconfirmed AGC's traditional objectives to "eliminate nonproductive, wasteful practices in the construction industry, and to hold wage increases to reasonable levels in line with productivity and the cost of living." He condemned such restrictive practices as "featherbedding and make-work" operations, which he said continue to exist and are increasing "despite lip service given by some labor leaders."

With construction now a more important prop than ever before in our national economy, Mr. Rogers warned that nothing short of full productivity would be acceptable to the public in the construction of homes, schools, hospitals, highways, factories, defense installations and other facilities needed for the progress and security of the nation.

• **Labor's offer**—Some segments of labor intend to do something about increasing their productivity and improving their industrywide relationships. At the opening general session, Richard J. Gray, president of the Building and Construction Trades Department, AFL-CIO, drew generous applause when announcing the 10 point policy statement adopted recently (ENR Feb. 13, p. 41) by his department which is made up of 19 national and international unions with a total membership of 3 million men.

(In a broad outline, the declaration of principles in the policy statement condemns slowdowns, forcing of overtime, spread-work tactics, standby crews and payment of excessive daily travel allowances. Further, production of workmen should not be limited, there should be no restriction on the full use of proper tools or equipment, the selection of craft foreman should be the entire responsibility of the employer and jurisdictional disputes should be settled in accordance with established procedure without interruption of the work.)

• **Contractor equipment**—Although not listed on the program as a topic for formal discussion, the many-sided question of construction equipment received its full share of attention in corridor conferences and in impromptu lobby gatherings. There seemed to be no clear-cut consensus. Some contractors, both large and small, view the lease-purchase option with skepticism, while others encourage or at least condone the practice.

Those favoring such plans say it helps keep their operations more flexible, permits them to retain more working capital and avoids increasing their personal property tax since they don't hold title to the equipment.

On the other hand, some contractors contend that the high cost of leasing certain items of equipment presents a financial hazard on short-term contracts. Unless you can continue to get enough work to pay out on the equipment until you reach a point where you can buy it, they say, it can become an unprofitable venture.

Although declining to be quoted, some contractors expressed confidence that the dealers from whom they purchase equipment will accept almost any reasonable down payment and monthly terms for the balance. But what puzzles them is that the dealers are not inclined to reduce prices in order to reduce their reportedly large inventories.

A few of the more conservative contractors feel that something has to give. They look at it in this light: As this year's construction program gets into high gear, new and improved equipment will be needed to replace outmoded and worn out machinery. At the same time

. . . AGC hears words of encouragement

the tough competition in bidding may not leave too much profit for investing in new construction equipment unless the price is right or more generous trade-ins are given by the dealers.

• **Tax relief**—The views of most, if not all, of the contractors in attendance were expressed by Travis Brown when he pointed out that one of the greatest needs of the industry was more equitable equipment depreciation to provide relief from excessive taxes. "Industry," said the Washington, D. C. attorney, "is still suffering from tax depreciation allowances set up in the 1930s when it was unable to replace equipment on a normal schedule."

Although he offered no quick remedy for solving the problem of equipment depreciation and salvage value, Mr. Brown reminded his listeners that it wasn't their problem alone. "It is also of major concern to the federal government," he said, "and already has been laid before Congress by the Administration."

Mr. Brown also urged greater flexibility in depreciation rates so that each contractor's rates could be determined upon the basis of the type of work he was doing and the equipment he was using. "Road contractors, for example," he said, "should be credited with higher depreciation rates because of outdoor use of their equipment."

• **Construction outlook**—The contractors aren't unduly concerned that there may not be enough construction to keep their men and equipment gainfully employed. This was reflected, in part, by AGC's executive director, James D. Marshall, who predicted "an expanding market for construction during 1958, in the face of declines in most other sectors of the American economy."

Although the figures have been used before, they are worth repeating. According to AGC's latest estimates, he said, the 1958 construction market has a potential of $68 billion. This is about $3 billion more than the total dollar volume of construction last year.

Another encouraging factor in the outlook for construction this year is the supply situation of construction materials, especially cement and steel. Both of these basic materials have been in adequate supply for several months.

Even more encouraging construction news was presented by AGC's division managers.

Donald A. Buzzell (Heavy Construction) said that the present substantial backlog of public works projects will continue to grow. Federal contract financing difficulties last year due to high expenditures, lower tax receipts and the public debt ceiling have been somewhat alleviated, and legislative tax relief is expected on the question of depreciation rates and salvage values of construction equipment. He also told his listeners that the establishment of a stand-by organization for the rapid use of construction forces and equipment for emergency disaster work now hinges on development of adequate liability and property damage insurance.

J. D. Sprouse (Highways) said that the increased cost of the 41,000 mile interstate highway program, now estimated to total $40 billion, should not be charged to the contractors. The reason: The costs of materials, equipment and labor with which to do the job generally have increased—since the original estimate was made—more than construction costs. He predicted that the increased cost estimate will either extend the length of the construction program (ENR Jan. 30, p. 21) or require a change in revenue collections to support it.

Welton A. Snow (Buildings) told his listeners that the volume of building construction in 1958 will total 5% more than last year—exclusive of military building construction. The volume of public housing this year is expected to be 68% above last year, he said, and private residential about 6% above last year. He also predicted that military housing programs may be curtailed unless Congress authorizes additional funds for the Federal National Mortgage Association.

Governmental officials and engineers in charge of multi-billion-dollar federal public works programs gave the contractors some measure of the construction potential this year. Most of it was encouraging—but not all.

• **Reclamation**—For example, the Bureau of Reclamation will spend about $180 million for construction during the current fiscal year, and the recommended budget for the next fiscal year is $198 million. Because of the tight national budget however, the bureau does not anticipate starting any major new projects during the coming year, according to Commissioner Wilbur A. Dexheimer.

"Spiraling costs in the face of this tighter budget," said Commissioner Dexheimer, "could cause a serious curtailment of the federal public works program and delay completion of some of the work. It is important for all of us to continue exploring improvements and adoption of new design and construction techniques which will hold the line on rising construction cost."

• **Army Engineers**—The Corps of Engineers construction program—much of which was cut back because of the economy program—has a brighter outlook now, according to Maj. Gen. W. K. Wilson, Deputy Chief of Engineers for Construction.

At present the Corps has enough money to continue work already under way, but no provision has been made for new starts, he said.

• **Air Force**—Construction contracts awarded by the U. S. Air Force in 1958 will be about double those of any other year since World War II, according to Maj. Gen. A. M. Minton, Director of Installations. Much of this will be for unique structures never before constructed.

Although no estimate was given of the total cost of this year's construction, General Minton said that about 50,000 new housing units are needed by Air Force personnel within the United States.

• **Highways**—Bringing his listeners up to date on the status of the national highway program, Bertram D. Tallamy, Federal Highway Administrator, said that a total of $3.7 billion worth of contracts would be in force by late summer of this year. This includes $1.6 billion on the interstate system and $2.1 billion for primary, secondary and urban highways. He declared that the over-all program is on schedule, and predicted that $2.8 billion of additional construction contracts will be awarded this year.

Claude R. McMillan, president of the American Association of State Highway Officials warned that "apathy on the part of the public toward right-of-way costs may make this new federal-aid highway program unreasonably costly." He also warned against diversion of essential highway revenue to non-highway purposes.

The four day meeting, with a record-breaking attendance of well over 2,000, saw Fred Heldenfels installed as AGC's new president (see cover and page 69).

In the final business session James W. Cawdrey, of Cawdrey and Vemo, Seattle, Wash., was sworn in as vice president.

Next year's annual meeting of the association will be held in Miami Beach, Fla., January 19-23, with convention headquarters at the Bal Harbour Hotel.

Index Available

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Homebuilder Fabricates Houses in Shop

7 AM—Crew poses with bare slab and first trailer load of house components.

7:30 AM—The second trailer has arrived and unloading is well under way.

4:30 PM—Exterior walls and roof are framed and sheathed.

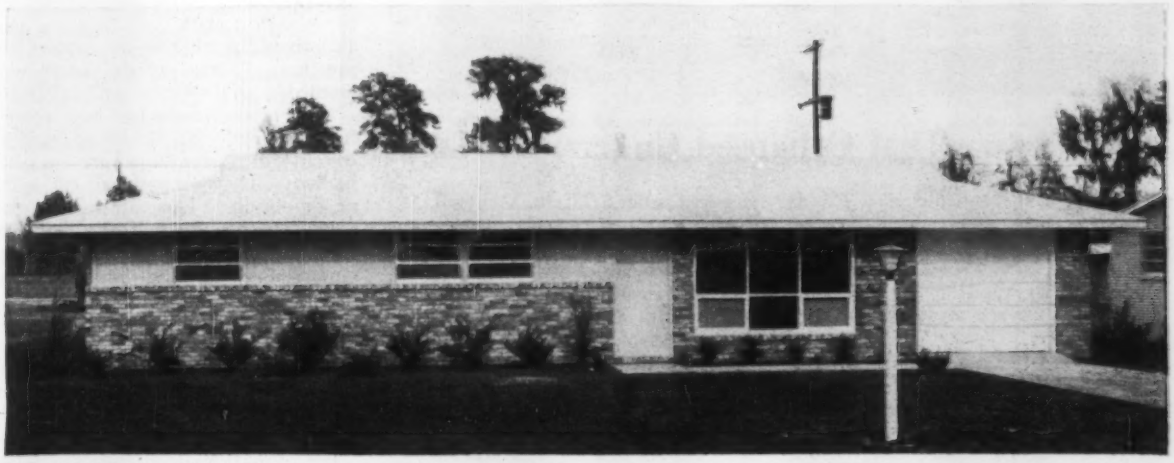
Last week, as most of the nation shivered in the grip of a brutal cold wave—and most construction jobs ground to a halt—a Georgia homebuilder was simultaneously beating the cold and construction costs by building house components indoors.

Clayton Powell, head of Powell Construction Co., Savannah, credits shop fabrication of house components by his own forces with keeping his prices 5% to 6% below the prevailing local market. It has also launched him into the business of prefabricating components for other homebuilders.

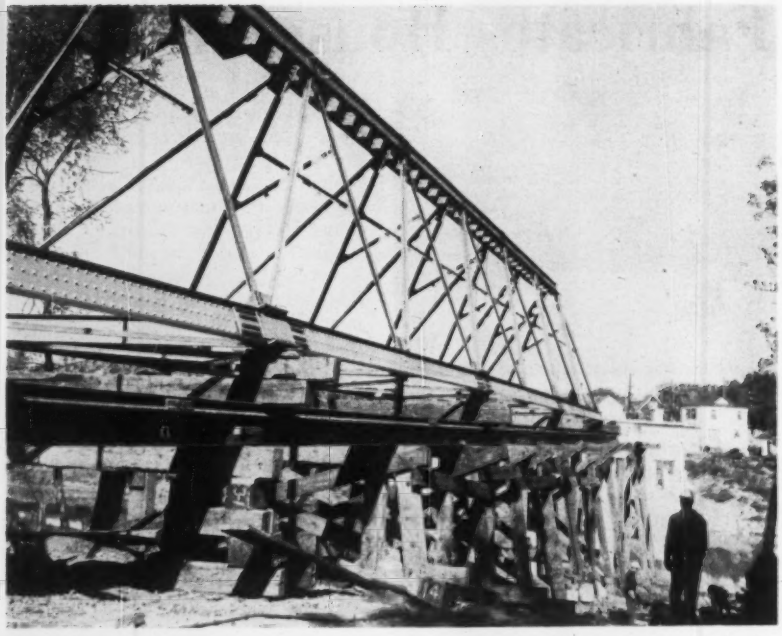
Mr. Powell figures he gets 25% more production from $1.50-an-hour men inside than from more skilled outside workers getting $2.50. The shop makes up such parts as exterior wall sections with the sheathing attached, trussed roof rafters, prefabricated gables, and prehung doors. The field men anchor the wall sections with the powder-driven fasteners, erect partitions with precut parts, and put the house together with very little on-site cutting.

The parts are sufficiently flexible in design to permit the style of house to be varied without changing parts. And Powell builds on an accelerated schedule, which is advantageous two ways, as he sees it: (1) Working capital is tied up for only short periods, and (2) he does not have to gage the market more than a very short time in advance. The result is a saving of nearly $1,000 on the price of a $12,000 house.

An example of Powell's speeded up schedule is the three-bedroom house appearing in the photos. Starting with a completed floor slab, the crew enclosed the house the first day and on the fifteenth day had it ready for the touch-up painter and final inspection—including completed landscaping and paving.



TWO WEEKS LATER—Three-bedroom house is complete inside and out, including landscaping, and ready for final inspection.



Probers Still Studying Pipeline Bridge . . .

. . . That Collapsed Under First Load

Details of the collapse of a 280 ft long, triangular steel-framed pipeline bridge in Winnipeg, Canada, on November 27, as water was being introduced into the pipeline, are still being veiled while probers continue their investigation.

The $135,000 structure, built to carry a 36 in. water main across Winnipeg's Assiniboine River, was designed by P. L. Pratley of Montreal, famed for his designs of the Lion's Gate Bridge in Vancouver and the spectacular Jacques Cartier Bridge in Montreal. Mr. Pratley and two federal agencies, the National Research Council and the Department of Mines and Technical Surveys, are investigating the mysterious and freakish collapse. However, Mr. Pratley has stated that "it's quite a possibility that we will never find out what the cause." There were no witnesses to the collapse.

On the afternoon of the fateful day, the bridge's pipeline was slowly filled with water as a final test. It is believed the line was full or nearly so (with 80 tons of water) just before midnight, when police received an anonymous phone call that the bridge was down.

Concrete piers supporting the span and adjacent landward portions of the water main were undamaged. Most of the steel in the river is being recovered. The collapsed portion of the bridge is valued at $60,000.

No official pronouncements have been made regarding cause of the failure nor have details of the bridge design been made available. The local engineering fraternity is speculating that the collapse resulted from buckling of the top flange from lateral or torsional movement.

The Assiniboine structure originally was planned as a suspension bridge, but Mr. Pratley, acting as consultant to Templeton Engineering Co. of Winnipeg, decided on the trussed span.

W. D. Hurst is city engineer of Winnipeg. Steelwork for the collapsed bridge was erected by Dominion Bridge Co.

Defects Delay Job

Prestressed bridge beams crack, ordered removed

Discovery of cracks in the post-tensioned concrete beams fabricated for the Hampton Roads bridge-tunnel approaches in Norfolk, Va., has halted work on some of the structures. The engineers, Parsons, Brinckerhoff, Hall & Macdonald, of New York City, and the Virginia Department of Highways have ordered the defective beams replaced.

The beams, ranging up to 86 ft in length and 3 ft in depth, have an I-shaped cross section and are both pretensioned and post-tensioned. Pretensioning was done with small-diameter wires anchored in the concrete throughout their length. Post-tensioning was accomplished with one to three end-anchored, parallel wire cables in sheathes. These tubes later were grouted.

Nine of the beams had been erected for the Granby St. Bridge in Norfolk, which will carry the street over the highway. They support half the width of the bridge. The cast-in-place concrete deck for this half also had been completed when the cracks were discovered. Meanwhile, local traffic is using a temporary timber trestle, which will be removed to make way for the other half of the bridge.

Several other beams not completely incorporated in the construction also have been declared defective by the engineers.

The beams were fabricated last fall by the Economy Cast Stone Co. in

Richmond, Va. They were erected by Leo Butler Co., College Park, Md.

• **Frozen grout suspected**—After the deck was in place, the temperature in Norfolk dropped to 15F. Then, an inspector noticed longitudinal cracks along the length of the bottom flange of the I-shaped beams. In some places, the concrete spalled enough to expose the sheathed tendons. Leakage of water at the bottom flange was observed and when a sheath containing the lowest of the three end-anchored cables was opened, inspection revealed the pressure of freezing and thawing of this water as a possible explanation of the cracks and spalling.

Prestressed beams furnished under the same contract include many short-span stringers that were pretensioned. These are reported to be entirely satisfactory.

The 3.5 mile long Hampton Roads bridge-tunnel extends between Norfolk and Old Point Comfort across Hampton Roads, the junction of Elizabeth, Nansemond and James Rivers with Chesapeake Bay. The 6,900 ft tunnel section was positioned about a year ago (ENR Nov. 29, 1956, p. 34). The approach structures now delayed were scheduled for May 1 completion.

Drivers Still Needed

Practical electronic road controls are a long way off

General Motors researchers made a progress report last week on electromagnetic vehicle guidance by demonstrating their automatic steering device along a mile long stretch of test road at the Warren, Mich., proving grounds. It was apparent, however, that the time had not yet arrived when a motorist could safely read this article while cruising down a busy highway.

The GM project is an extension of one begun in 1953 by Radio Corporation of America, in which guidance signals are transmitted from a center-of-lane guide cable buried in the highway (ENR, Jan 16, p. 27). GM has made a start at translating these signals to provide automatic steering control.

A wire in the highway carries an alternating current that generates an electromagnetic wave. Tuned pick-up coils, spaced on the front bumper to straddle the field, feed an analog computer located in the car's glove compartment. The computer in turn actuates a servomechanism that controls the steering.

Three basic problems are involved in automatic steering: First, the car must sense its location with respect to the guide wire. Next, it must decide how much and in which direction to turn. Finally, it must turn its front wheels. The biggest headache now is in making the decision. It is still questioned whether this can be done best in the car or at the road. But the other two functions are well within the realm of current technology.

• **Automatic braking**—While the present GM system controls the steering only, most auto manufacturers are working on automatic radar-controlled brakes. But most of these devices work too well. The trouble with the radar systems is that they cannot distinguish highway signs or cars parked at the curb from real obstructions. On the other hand, a radar-equipped car would not hesitate to tackle a brick wall or someone's house, where no metal reflecting surface was at hand.

GM's research vice president, Lawrence R. Haftstead, said that automatic driving was far in the future, but that evidence of real public demand would accelerate developments. He hoped that these research efforts would stimulate cooperation between automotive, highway and traffic engineers in developing an automatic steering system.

Closed Valve Hides Big Main Break

The day-and-a-half near shutdown of Jersey City, N.J., last week due to a water main break that couldn't be located turned out to be an emergency that needn't have lasted more than several hours. An emergency crew unwittingly closed the valve that isolated the break during the early hours of the scramble, but because the valve's threads were stripped in the process, the repair men thought the valve was still partially open.

On Sunday night February 9, water pressure in the downtown area east of twin distribution reservoirs dropped from normal 45 psi to 3 psi while flow jumped from 8.5 to 32 mgd. Search teams operating according to plan isolated various sections of line all over the city to locate the break, among them, unknowingly, the faulty 36 in. main below the Hackensack River. The other end of this main, which is an alternate feed to a cluster of industries on the far bank of the river, is always kept closed.

Not finding the leak right away, search teams concentrated on the affected area east of the reservoirs, as pressures in the system were gradually brought back to normal by introducing water from a high pressure bypass main and flows unexplainedly became normal.

Fearful, meanwhile, that the large amount of untraced water lost during the early hours after the break might cause cave-ins, many industries and schools in the downtown area were closed on Monday.

Monday evening, after all other possible break locations were eliminated, the search was called off while the city's waterworks men pondered the lack of evidence. They deduced that the leak must be in the main under the Hackensack River. Sure enough, it was found Tuesday morning, about 100 ft out from shore. In the bitter cold and confusion of Sunday night, the search crew had erroneously given the valve more turns than required, thus stripping its threads.

Dual Specs Out

Order is rescinded after cost is seen to be high

A short-lived policy of dual specifications—to allow bids for both asphalt and concrete pavements—for all its road projects has been revoked by the Pennsylvania State Highway and Bridge Authority.

The action came after it was estimated that such duplication of specifications would cost six months time and add $1.4 million to the authority's current program.

Authorization for such bids—which never actually became effective—was approved in a December meeting of the authority board. A vote deadlock had been broken by Highways Secretary Lewis M. Stevens vote for dual specifications. Later, however, he asked the board to rescind the decision, stating that he and his chief counsel had not realized the cost in time and money that would be involved in duplicate plans.

A committee was appointed to study the problem and at a special meeting on January 27 the order was rescinded and a new bid policy adopted.

This provides for dual specifications only on road projects where "methods of construction are shown to be competitive by engineering estimates and equally desirable." The authority's current 50 project program is excluded from this new policy and will stand at 38 portland cement concrete and 12 bituminous concrete pavements.

Fish vs Power

Power man decries "gold-plated" fish facilities

An attack by Glenn Smothers, manager of the Grant County Public Utility District, Ephrata, Wash., on the "gold-plating" of migratory fish handling facilities at some Columbia River dams appears to be the first phase in an attempt by public and private utilities of the area to fight the requests of fisheries interests for elaborate future facilities.

"It is not improbable that within the next 15 years the power and irrigation projects' contributions to the protection of salmon and steelhead in the Columbia River will equal the monetary value of the Columbia River fishery resource," Mr. Smothers declared.

Figures prepared for the PUD by Fred Davidson, its fisheries consultant, place the investment in fish handling facilities at resource development projects and in associated hatcheries and research at more than $127 million. Cost of operating these fish ladders at various dams, hatcheries and other works, and cost of other fisheries activities, exceeds $8 million a year, according to the PUD figures. Value of the fish for which these facilities were constructed is estimated at $16 million a year.

Fish facility costs are expected to rise sharply as more dams are constructed. Estimated initial costs associated with seven of 17 planned additional power dams in the river system totals $78 million. Additional operating costs are estimated at $38 million annually. The seven projects include Ice Harbor, Little Goose, Lower Monumental, Mountain Sheep and Pleasant Valley, all on the Snake River, and Wanapum and Wells dams on the Columbia. The other 10 dams, which are not named, would add at least another $100 million to the total investment, according to the PUD figures.

Mr. Smothers believes the requirements for handling migratory fish often are founded on "emotional rather than factual" basis. "We have no objection to spending money necessary to continue the fish run, or even enhance it, but we feel the functional feasibility should be first established by research and model test before being required on a full-size project," he said.

Power from Grant County PUD's Priest Rapids Dam, now one-third complete, will cost 9% more because of the $10 million investment required in migratory fish facilities, Mr. Smothers said. They would have cost another $2.5 million if the PUD had not insisted that all facilities be justified from a functional standpoint, he said.

The Grant County PUD, together with other public and private utilities, is understood to be considering a public relations program that would include a movie to tell its side of the fish-vs-power story.

Briefs

• **No second Welland Canal**—Having disposed of nuclear power as a future threat, costwise, to the Niagara Power Project, the Power Authority of the State of New York last month took on the Welland Canal. PASNY special consultant Maj. Gen. Thomas F. Farrell reported that a U.S. canal paralleling the Welland Canal, with its diversion of additional water from Niagara, was many, many years off; that the $25 million deepening of the Welland Canal under way would bring its capacity close to that of the St. Lawrence Seaway; and that $150 million worth of doubled Welland locks could provide plenty of canal capacity for some time to come.

• **New college building**—City College of New York will begin construction of a new $8 million School of Technology Building this spring. The building is expected to enable the college to increase its engineering enrollment by 38% over the next seven years.

• **Study of Oregon damsite**—The Portland (Ore.) General Electric Co., will invest $180,000 for exploration at the Round Butte Dam site, located eight miles upstream from PGE's new Pelton Dam on the Deschutes River. Bechtel Corp., San Francisco, will conduct the studies. A 300 ft earthfill dam with about a 250,000 kw powerhouse is planned.

• **Interstate air pollution agency**—The Interstate Sanitation Commission (N. Y., N. J., Conn.) gave warning last week, in a report to the governors and legislatures of New York and New Jersey, that an interstate agency should be established to fight the growing danger of air pollution in the New York metropolitan area. ISC recommended that an interstate instrumentality patterned after the administrative practices followed by ISC in the abatement of water pollution, be established to deal with air pollution

• **Army package reactor okay**—The Army Package Power Reactor was formally accepted by the government, it was announced by its builder, Alco Products, Inc., and the Atomic Energy Commission. The reactor, designated APPR-1, was built at Fort Belvoir, Va., for the Army Engineers and is the first of a planned series of power reactors, all parts of which could be packaged for transport.

• **Georgia waste conference**—The problems of stream pollution and waste treatment due to the industrialization of Georgia will be discussed at a one day conference, April 11, in Atlanta. This first meeting of its kind in the state is sponsored by the Georgia Institute of Technology, Georgia Water and Sewage Association and the Georgia Department of Public Health.

• **Puerto Rico homes**—A group of U.S. contractors and real estate builders will start construction on 3,300 homes in Puerto Rico during 1958. Prices will range from $7,500 to $14,490. In Manait, where strong demand is reported, a 200-home project is planned; Ceiba eventually will have 1,500 homes built by the group. Biggest project will be a 1,600-home development in Caguas. Jack Gellis, Long Island, N. Y., builder, is one of the sponsors.

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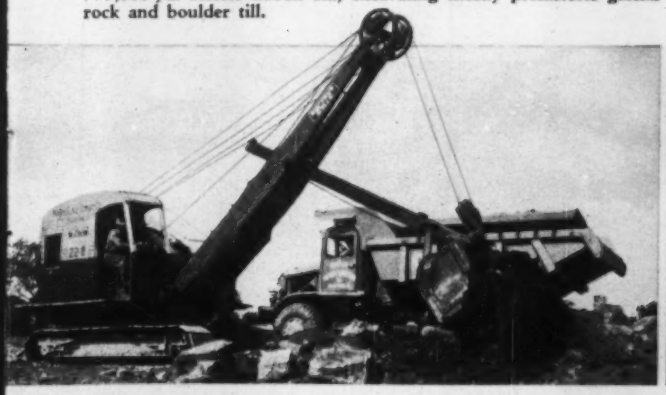
South Milwaukee, Wisconsin

KENTUCKY TURNPIKE. Working on Section 1C, near Okolona, contractors relied heavily on three sturdily-built, steady-working Bucyrus-Eries — a 2½-yd. 54-B and these two 1½-yd. 38-Bs. The job is part of a $38-million, 38-mile toll road between Louisville and Elizabethtown.

CONNECTICUT TURNPIKE. On the 1⅓-million yard Darien-Westport section of this 129-mile toll road, the contractor used a big capacity Bucyrus-Erie — the 3-yd. 71-B. It is working the 775,000-yd. Keeler Brook cut, excavating mostly prehistoric glacial rock and boulder till.

SAN FRANCISCO FREEWAY. With pressing deadlines on a 1-million yard earthmoving contract in construction of the Freeway across the Bay, equipment dependability was a must. This 4-yd. 88-B, one of several Bucyrus-Eries used by a veteran contractor, not only supplied the dependability, but contributed big output as well.



PENNSYLVANIA TURNPIKE. In construction of a 4¼-mile section of the northeastern extension of this toll road, a ¾-yd. 22-B loads rock and earth to a rear dump in clearing a fill area. Users find that quality-built Bucyrus-Eries pay off on a variety of highway work — providing power, strength, speed, and mobility for light- or heavy-duty

LITORAL HIGHWAY, EL SALVADOR. A 2-yd. 51-B excavates rock and gravel on an 8¾-million yard, 50-mile section of this Pacific Coast highway from Acajutla to LaLibertad, south of San Salvador. Contractors like the simple, accessible controls and easy operation of Bucyrus-Eries which reduce operator fatigue.

Duquesne Light Company uses to bring more electricity

NATIONAL Seamless being lowered through house service lines into trench. Continuous sections between manholes sometimes reached lengths of 1900 feet.

NATIONAL Seamless Pipe being welded into continuous lengths between manholes. Welds were tested at 500 psi—2½ times nominal operating pressure. Flush inner surfaces of welds were assured by pre-flaring the pipe ends and then using a steel backing or chill ring to prevent the formation of welding icicles.

WALLS WITHOUT WELDS

high-pressure pipe-type cable to Pittsburgh

PREPARING to weld pipe for pulling across Ohio River. Pipe for the river crossings has heavier wall, to provide additional margin for burning in case of a line to ground fault in a river section. A 1-inch coating of concrete overall provides negative buoyancy of at least 10 pounds per foot to prevent flotation during installation.

DUE TO THE EXTENSIVE building program and increased use of air conditioning in downtown Pittsburgh in recent years, Duquesne Light Company found it necessary to expand its electrical facilities in that area. This was accomplished by installing a new substation in the downtown district, and supplying it by two 69 KV feeders from two existing power sources.

The transmission system chosen to handle 100,000 KVA at 69 KV was a high-pressure oil pipe-type cable. Basically, this system consists of seamless steel pipe, joined by welding, functioning as conduit into which is drawn three solid-type paper-insulated oil-impregnated cables. The remaining space within the pipe is filled with high-grade insulating oil which is kept at a nominal operating pressure of 200 psi by automatic pumping facilities. This external pressure on the cable keeps the cable dielectric subject to saturation by insulating oil under all operating conditions so that the formation of voids within the dielectric is virtually eliminated. The pipe-type cable system has a lower failure rate than any other high-voltage cable system in use today.

USS National Seamless Pipe, 8⅝" O.D., was the conduit used throughout this installation. The exterior was coated with an asphaltic base material for protection against electrolysis and forms of corrosion. After pipe sections were laid, the pipe was put through a rigid evacuation and drying procedure—one of the most critical phases of the job, since moisture in the pipe may lead to displacement of oil in pockets of low points and eventual cable failure.

Critical installations like this call for exceptionally strong, flexible pipe to resist severe internal and external stresses; uniform, dependable pipe that, once installed, will give long, trouble-free service. National Seamless Pipe is chosen consistently because it fits the specifications of every job so well.

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USS

NATIONAL SEAMLESS PIPE AND TUBES

UNITED STATES STEEL

Iowa Tries a Welded Aluminum Bridge

Design of first structure of this type required special considerations; state considers the project as research

Ned L. Ashton
Consulting Engineer
Iowa, City, Iowa

A welded aluminum highway bridge, believed to be the first yet attempted, will be completed next July in Iowa. To be located in Des Moines, the four-span continuous structure was put under construction the latter part of December with the award of a contract to Jensen Construction Co.-United Contractors, of that city, on its low bid of $124,682.73 (ENR Dec. 19, 1957, p. 17).

The bridge will contain about 75,000 lb of structural aluminum and 4,300 lb of aluminum handrail. The aluminum components were included in the bid at $1.00 per lb erected, and will be fabricated by the Pullman Standard Co., Chicago.

The 220 ft long structure will carry an existing two-lane road over a new section of four-lane divided interstate route. The project was initiated by the Iowa State Highway Commission and later adopted as a research project by the Commission's Research Board. Development of the project is under the supervision of Mark B. Morris, director, highway research, and Neil Welden, bridge engineer. Design and detail plans of the bridge were prepared by the author.

This particular type of bridge was selected for aluminum studies because it is typical of thousands of other grade-separation projects that will be built all over the country as part of the new federal program to improve our existing highway networks. It has a 30 ft wide reinforced concrete deck slab and 2 ft concrete walks. It is designed for H20-S16 (AASHO) live load.

• **Four-span continuous**—Span lengths are 41.25 ft, 68.75 ft, 68.75 ft, and 41.25 ft. There are four lines of welded aluminum girders spaced 9.5 ft c-c beneath an 8 in. reinforced concrete roadway slab. The girders are connected together with continuous transverse aluminum beam diaphragms at the piers and abutments and at 13 ft 9 in. intervals in between to equalize deflections.

The girders are fixed to Pier No. 2 at the center of the bridge and have sliding aluminum sole-plate expansion bearings on steel plates at Piers 1 and 3, and at both abutments.

• **Design stresses**—Differential thermal stresses that originate between the continuous concrete deck and the aluminum girders are absorbed as calculated stresses, which are deducted from the allowable working stresses on the aluminum section. In this way, the combination of dead-load, live-load and impact stresses, plus the provision for temperature changes ranging from 100F below to 50F above an average temperature of +60F, will not exceed a calculated working stress of 15,000 psi in the aluminum beams.

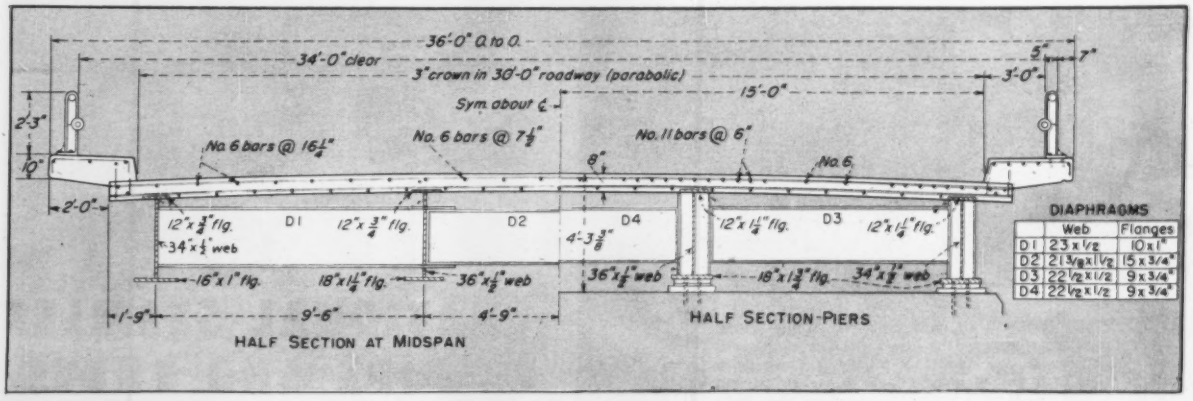
Strong connections are provided between the expansion dams and the ends of the girders at both ends of the bridge so that temperature stresses will not cause any relative displacements at the free ends of the girders. Moreover, a sufficient minimum amount of longitudinal reinforcing steel is provided for the full length of the concrete slab to prevent the girders from pulling the slab in two when the temperature rises.

This steel, in combination with other heavy longitudinal steel reinforcing bars in the top of the slab over the piers, is also designed for composite action with the aluminum girders over the piers, to help carry the live load and the thermal stresses in the normal negative-moment areas. The 8 in. concrete deck slab is also designed to be composite with the aluminum girders for the live loads in the normal positive-moment areas. It is connected to the girders by means of aluminum shear lugs that are welded to the top flanges.

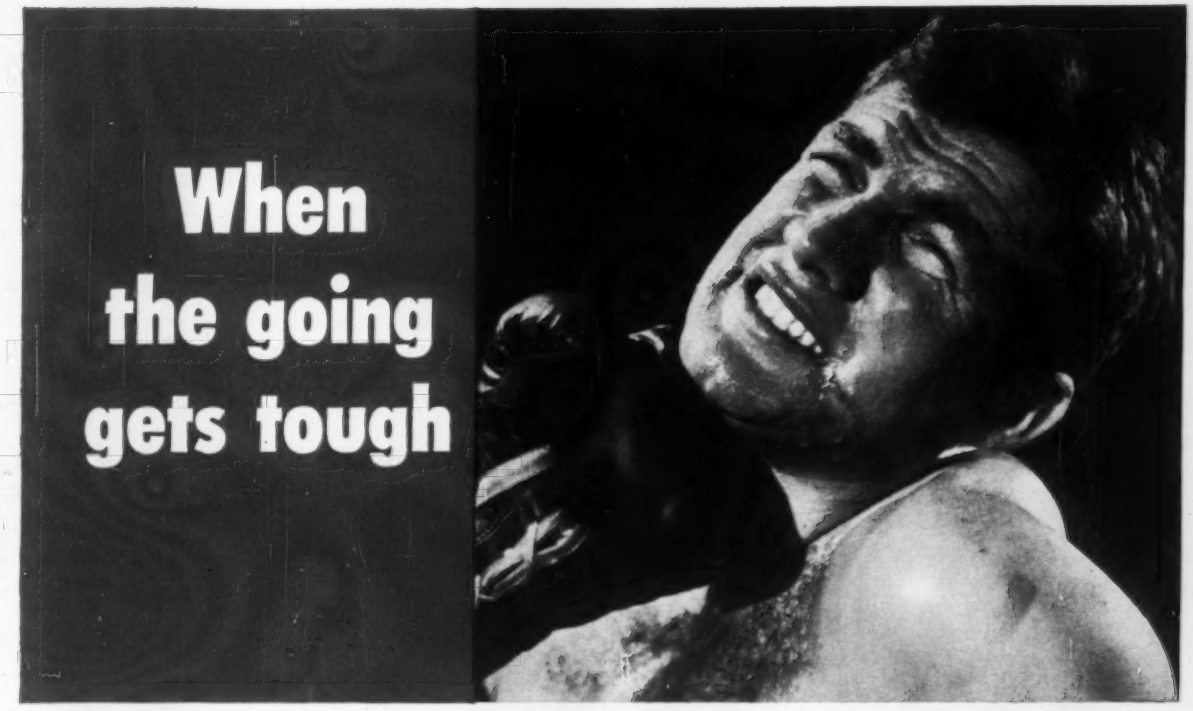
• **Continuous composite design**—In addition to composite behavior, which has been definitely established by thousands of tests as existing in all bridges, it is also desirable to have smooth deflected profiles, free from cusps over the piers and sagging midspans and free of as many additional expansion breaks in the paving as possible. Therefore, the design should also provide for continuity, which is economical as well.

The composite action of a concrete deck slab with an aluminum beam is more favorable than the corresponding action of concrete with steel, because the value of E (modulus of elasticity) for aluminum is more nearly compatible with the E for concrete than concrete is with steel. Therefore, with aluminum we can use about one-third of the concrete in the transformation into an equivalent aluminum section, whereas with steel we can only use about one-tenth of the concrete area. This fact tends to compensate partly for the thermal differences.

• **Typical stresses**—As shown in the ac-



ALUMINUM BRIDGE will be of continuous girder type, all welded. Composite action between its concrete deck and aluminum girders will be promoted by aluminum lugs welded to the top flanges and embedded in the concrete deck.



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- Perma-Flo Oils
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- Vesuvius "X" Gear Compounds

companying table of typical stresses for one of the interior girders, the bottom flange will be under a maximum tension of 14,520 psi in the positive-moment area of the end span. At the same point the top flange will be under a compressive stress of 4,690 psi, and the concrete in the roadway slab will be under 796 psi compression.

These stresses are based on the assumption that the aluminum girder section carries the entire dead load without any composite action, and that there will be full composite action for the live load. These assumptions are believed to be in full agreement with the real behavior of all deck beam and girder bridges and with very widely accepted modern design practice.

The girders at this section consist of a 12 x ¾-in. top flange, 12 x 1-in. bottom flange and a 36 x ½-in. web plate, with a 96-in. width of the 8-in. concrete slab counted as the composite concrete top flange.

Thermal stresses given in the table apply to the contact flange and concrete surfaces only. Other more remote portions of the girder sections will have less intensities of thermal stresses due to relief by bending actions as a result of the eccentric application of the concrete force.

In the negative-moment area over the first piers, the inside girder section consists of a 12 x 1-in. top flange, a 36 x ½-in. web, an 18 x 1¼-in. bottom flange and eleven #11 longitudinal steel reinforcing bars in the top of the concrete slab for composite action. In this area—as shown in the table—maximum stresses are 14,165 psi compression in the bottom flange; 15,570 psi tension in the top flange; and 13,200 psi tension in the #11 longitudinal reinforcing bars.

• **Live-load deflection**—The relative live-load deflections of the bridge for two lanes of H20-S16 trucks in symmetrical balanced positions are as follows: For the interior end-span girder, 0.364 in., which is 1/1,375 of the span. For the same girder in one of the interior spans, it is 0.797 in., or 1/1,035 of the span.

For the worst possible unbalanced positions, the live-load and impact deflection of the interior girder in the interior span may equal 1.268 in. or 1/650 of the span. However, strong, continuous, transverse-floorbeam-type diaphragms are provided in all spans to help distribute the loads and equalize deflections.

Since it is necessary to use either rather low design stresses or excessively deep girders to keep the ratios of live-load deflection to span length compatible with accepted standards of rigidity, it is our contention that this extra margin of strength, which is available in the aluminum, is lost anyway due to the requirements of rigidity. Consequently, it becomes available and can be safely used to resist and absorb the thermal stresses.

We also are fully aware that it is impossible to figure all the combined stresses in any structure with any very high degree of accuracy. But even so, we are sure that this structure, as designed, has at least as large a margin of safety—and probably a much greater relative degree of safety—than most other existing conventional bridges in which the differential thermal stresses are not even calculated.

• **Welded fabrication**—Reduction of allowable stresses due to welding was given proper consideration in the design. Flange butt welds are located at points of least moment and spliced for the full strength on the heavy plate side of the section so that stresses do not exceed 8,000 psi.

The girders are to be fabricated by welding three plates together to form an I-section. Specifications call for the use of the shielded inert-gas arc-welding process for either 5456-H321 or 5083-H113 nonheat-treatable magnesium-aluminum alloy conforming to ASTM specifications B209-55T GM51A or to the Military (Ships) specifications A-19005. The plates may be cut by the shielded tungsten arc process, known as Heliarc, and 5456 plates should be welded with 5556 rod and 5083 plates with 5183 welding rod.

In the fabrication of the girders, the flange plates are to be welded to the web plate with continuous 5/16 in. fillet welds. These welds can be made at an estimated rate of 9 in. per min., and at an actual cost of about $0.50 per foot of weld.

The web plates are required to be trimmed to cambered outlines. Using the shielded arc process, a ½ in. plate can be cut at a rate of 150 in. per min.

All aluminum metalwork in contact with or embedded in the concrete, such as the shear lugs and top flanges of the aluminum girders, are to be given two coats of paint to prevent direct contact and electrolytic reactions between dissimilar materials.

The bridge will be supported on three reinforced concrete three-column intermediate piers and two reinforced concrete abutments. Each abutment is supported on 14 treated timber piles about 40 ft long. Each pier is carried on fourteen 10 in. steel bearing piles about 24 ft long and weighing 42 lb per lin ft. All piles will be driven to refusal in firm shale.

• **Future prospects**—Much valuable information will be obtained from this project for short-span bridges. And if this bridge is found to be competitive with other conventional designs in this range of spans, it will have thousands of similar applications in the fuure due to the elimination of painting and the diminishing of other maintenance problems.

In the longer spans it will be even more competitive due to the great reduction in weight that becomes possible when the concrete deck is replaced with an aluminum floor that will also function as part of the girders or truss.

Table of Typical Stresses for Interior Girder

(A) In positive-moment area of end span:

	Bottom Flange (Tension)	Top Flange (Compression)	Concrete (Compression)
Dead load	+ 1,520 psi	−1,760 psi	...
Live load plus impact	+ 7,440	− 150	−456 psi
For gravity loads	+ 8,960	−1,910	−456
Temperature:			
− 40 deg. F	+ 5,560	.....	−340
+110 deg. F	.....	−2,780	...
Gravity plus thermal	+14,520 psi	−4,690 psi	−796 psi

(B) In negative-moment area over Pier 1:

	Bottom Flange (Compression)	Top Flange (Tension)	Steel Bars (Tension)
Dead load	− 4,810 psi	+ 7,070 psi	0
Live load plus impact	− 6,720	+ 3,230	+13,200 psi
For gravity loads	−11,530	+10,300	+13,200
Temperature:			
− 40 deg. F	.....	+ 5,270	.....
+110 deg. F	− 2,634	.....	.....
Gravity plus thermal	−14,165 psi	+15,570 psi	

The Mathews barrel, containing all working parts of the hydrant, is readily removed for inspection or repair by simply unscrewing it from the elbow and withdrawing it through the protection case.

I want you to see for yourself how the Mathews replaceable barrel is a real community asset

I can show you easily and quickly with this scale model. See? When a Mathews is broken by a skidding automobile, you can slip in a new barrel in a matter of minutes, *and without excavating*. It's a real safety feature for the community—allows only momentary interruption of neighborhood fire protection.

And these additional quality features help keep the Mathews at the head of the line:

- Compression-type valve opens against water pressure—a positive leakproof construction
- Operating thread cannot be bent
- Head revolves 360° just by loosening bolts
- Nozzle sections are changeable
- Nozzle levels can be raised or lowered without excavating
- Bell, mechanical-joint or flange-type connections
- O-Ring seal furnished when specified

MATHEWS HYDRANTS—by **R. D. WOOD COMPANY**

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

A modern pumping plant takes shape in accordance with well thought out plans made years ago, as the municipalities on the east side of San Francisco Bay continue to expand. Eye-pleasing design is combined with rugged utility in an expression of contemporary style with a building meant more to house machinery than people.

Pumping Plant

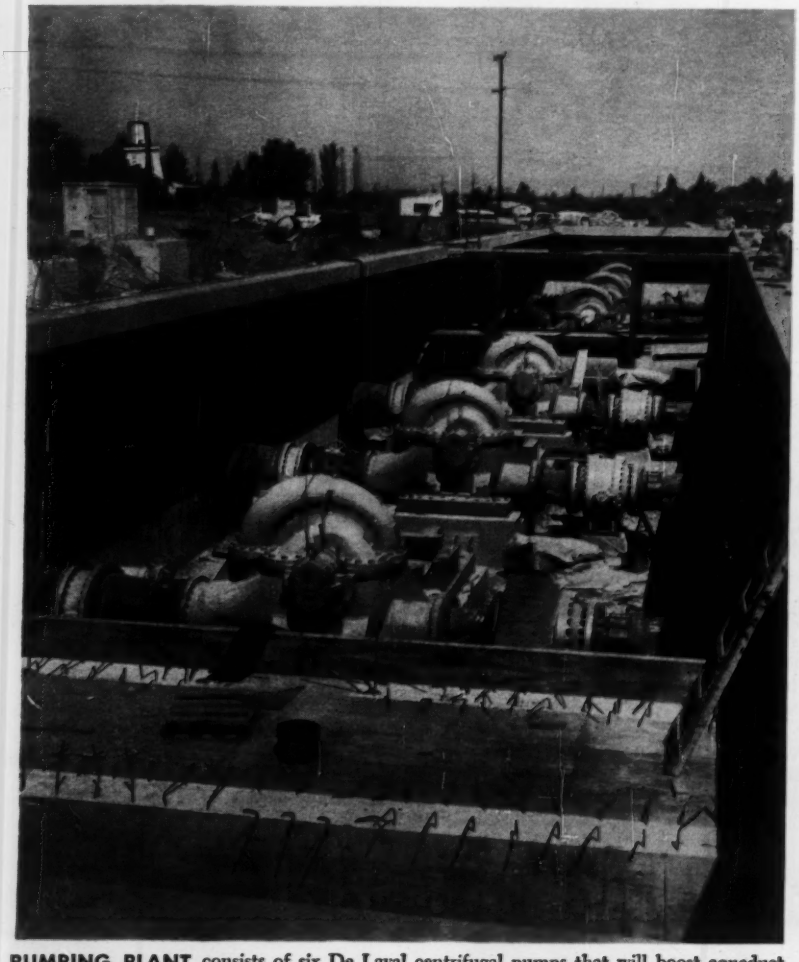
A strikingly modern pumping plant is being installed on the 94 mile Mokelumne Aqueduct that carries water from the Sierra Nevadas to the East side of San Francisco Bay.

Architecturally, it has pleasing contemporary styling, acoustical treatment and provision for air conditioning.

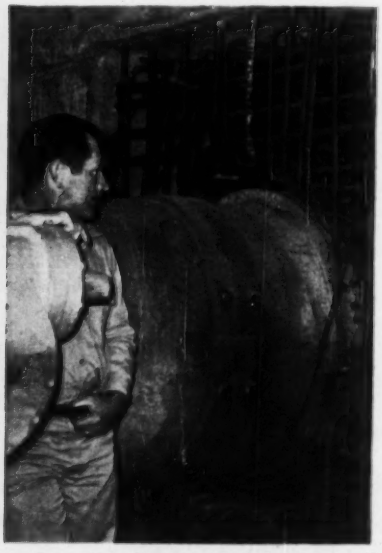
Operationally, it will feature an automatic shutoff and bypassing system in case of power failure.

In its construction, several of the latest techniques were employed.

The plant is being built by East Bay Municipal Utility District at Walnut Creek, Calif. as another well ordered step in keeping capacity of Mokelumne Aqueduct ahead of water demand. The aqueduct, which originates at Pardee Reservoir consists at present of two barrels. A 65 in. dia line, including a pumping station in the Walnut Creek area, was put in operation in 1929 to supply 67 mgd. During World War II, when material and manpower were short, surging water demand was met by building a second pumping station rather than the long-planned second barrel. It was not until 1950 that a second 67 in. dia barrel was put into service. This (with shutdown of the wartime pumping station) raised the capacity of the system to 117 mgd (ENR, Jan. 8, 1948, p 96). The present construction continues the smooth sequence of plans laid in the 1920's. It will boost the capacity to 153 mgd—enough to assure adequate water supply for EBMUD users until 1963, at



PUMPING PLANT consists of six De Laval centrifugal pumps that will boost aqueduct capacity to 50% above gravity flows if pumps were not operating.



HEAVY REINFORCEMENT in lateral wall assures solid grout to handle heavy thrust.

—A Look Ahead in '29 Pays Off in '58

which time a third barrel of 87 in. dia will be constructed (ENR Aug. 15, p. 30).

Since the original pump station along the first aqueduct is old and due for replacement, the new Walnut Creek Pumping Plant will incorporate pumps for both existing aqueducts. However, the building was designed to house additional pumps for the third barrel which will raise the capacity of the system to 325 mgd, the full extent of EBMUD's water rights on the Mokelumne River.

Six DeLaval 24x30 in. double-volute, double-suction centrifugal pumps make up the pumping plant. Three of these, each having a capacity of 33.7 mgd at 290 ft head will operate on the first aqueduct. The remaining three, each handling 43.5 mgd at 300 ft head, will operate on the newer aqueduct. (The system's new rating is arrived at by considering that only two of the three pumps for each aqueduct will operate at any one time.)

Three 2,000 hp, 720 rpm motors will drive the No. 1 pumps, and three 2,500 hp, 900 rpm motors will drive the No. 2. Westinghouse synchronous motors utilizing 4,160 are to be employed.

Operation of the plant will be nearly automatic with only one man needed for supervision. In the event of power or pump failure, 24 in. spherical valves located at the discharge side of each pump will close automatically. Water will then bypass the plant by gravity flow through tilting disk check valves until normal operation can be restored. In addition, each pump can be isolated from the system by manually operated butterfly valves on both sides of the pump.

• **Architecture**—The building housing the pumps is of contemporary design. It represents a fresh approach to the problem of reflecting basic modern style in a building meant to house machines rather than people. The result is a glass enclosed structure both functional and pleasing to the eye.

It was achieved using prefabricated steel rigid frame bents with cantilevered overhang. These are spaced at 20 ft intervals and rise 15½ ft above ground-level. Warnecke and Warnecke of Oakland, Calif., are the architects.

A notable feature of the plant is acoustical treatment which is aimed at reducing noise to such a level as to cause no disturbance to neighbors. The building will be equipped with a ducted heating and ventilating system, with provision for air conditioning at some later date.

• **Unusual foundation**—The pump station measures 240x60 ft and has reinforced concrete foundation walls surrounding the underground pump installation. The long walls, in addition to acting as foundation structure, serve to anchor the suction and discharge piping and as a base for a 15 ton traveling crane. Designed to support a horizontal thrust of 200,000 lb at each wall opening, these walls have a thickness of 42 in. at the base, stepping down to 27 in. at the top near ground-level. A 4 ft monolithic slab underlies the walls to serve as foundation and floor for the pumping equipment.

In constructing the foundation walls an unusual problem of insuring adequate strength where conduits passed through the wall was solved by injecting grout into previously placed aggregate and reinforcement. The walls were placed in a conventional manner, leaving rectangular openings for the pumps' suction and discharge piping with the reinforcing bars in place. After the piping was positioned and connected to the pumps, 1½ and ¾ in. aggregate was packed into forms which covered the connecting space. Voids in this preplaced coarse aggregate were then filled with grout. This grout consists essentially of sand, cement, and water with an admix, patented by Intrusion-Prepakt, Inc. of Cleveland, Ohio, which compensates for setting shrinkage.

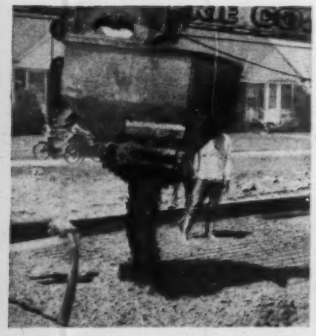
The entire project was financed from the current revenues of EBMUD at a cost of about $2 million. A construction contract for $1.11 million was awarded to Elmer Freethy of El Cerrito, Calif. EBMUD furnished the major mechanical and hydraulic equipment, the cost of which made up the remainder of the total. All engineering for the project was done by the EBMUD engineering department, headed by R. C. Kennedy. William Worden of EBMUD is the resident engineer.

FORMS ARE STRIPPED from heavily reinforced wall which was intrusion grouted.

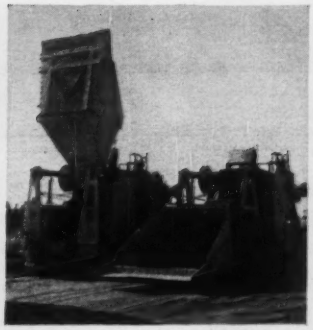
DISCHARGE MANIFOLD is put in place and welded. Manifold increases to 60 in. dia in three successive sections before connecting with aqueduct.

WORTHINGTON DUAL DRUM PAVEMASTER on the job for Detroit Contractor Thomas E. Currie Co. This is one of two pavers that worked 59 days straight with no downtime.

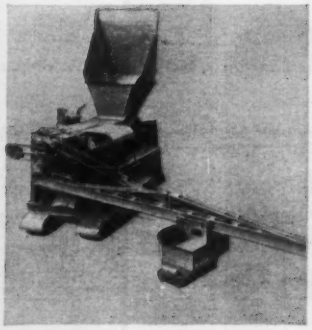
PAVERS BEAT DEADLINE



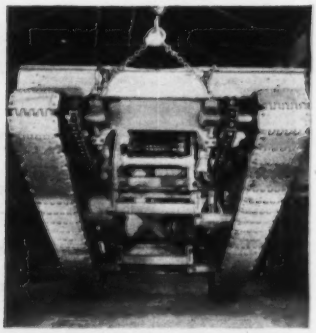
Hydraulic bucket control eliminates tedious hand spreading or the expense of a machine for certain types of projects.



Lightning fast charging. Skip travels from ground (right) to charging position of 56 degrees slope (left) in just 6½ seconds.



High bucket speed—256 feet per minute both forward and reverse—speeds operation, increases output on the new Pavemaster.



Rounded "cats" greatly reduce lug marks and gouges when traveling and enable Thomas Currie Co. to work on finished pavement.

93 BATCHES PER HOUR is Supervisor Cargill's average production. Hydraulically controlled boom with its fast, smooth swing assists operator in spreading concrete.

Equipment sold and serviced by J. R. Panelli Co., Detroit, Mich.

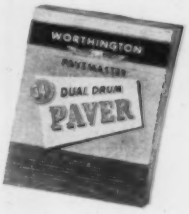
BY 2 WEEKS

Two Worthington pavers operate 59 days straight without downtime to help contractor finish in time

Longer life for skip cables is assured by a new type fabricated steel bullwheel and hoist drum with grooves for cable travel.

Weather trouble on a subdivision paving job put the Thomas E. Currie Co. of Detroit, Mich., three weeks behind schedule. "To catch up," said General Supervisor Glenn H. Cargill, "we ran our Worthington pavers 59 days straight. Not only did we make the deadline, but beat it by two full weeks. It's performance of that kind that makes new business an awful lot easier for us to get. In my opinion there's no other paver that can take it like a Worthington."

A respected name in Michigan contracting circles for the last 52 years, the Thomas Currie Company has used Worthington pavers for three decades. Says Mr. Cargill, "I highly recommend them to the contractor who wants maximum production with a minimum of downtime." On these two pages are some of the features of the new Worthington 34-E Dual Drum Pavemasters that Supervisor Cargill pointed out for special comment.



For your copy of this 28-page Pavemaster bulletin, please write to Section R-74, Worthington Corporation, Plainfield, N. J. Ask for Bulletin 1270-B1.

WORTHINGTON

MAIN STREET of Salem, Mass., is an open gully as contractor struggles to build new tunnel for railroad, while keeping old track in operation. New tube will eliminate grade crossings.

Tunnel Grief: Two Years in the Making—

For more than two years, Washington Street, the main business thoroughfare of the Massachusetts city of Salem (population 42,000) has been, from curb to curb, a gaping gully filled with construction machinery and workers. Its storekeepers' view has been limited to a few feet of sidewalk and an 8-ft-high board fence.

The City Hall and the Essex County Court House face on the same sort of a view.

And the condition will continue for at least another year.

What has given the city the appearance startlingly reminiscent of that of the main street of Winsted, Conn., after hurricanes a few years ago, is an earnest attempt by the city fathers and the State of Massachusetts to eliminate two railroad grade crossings. One of the Boston & Maine Railroad's commuter and freight lines follows exactly the course of Canal and Washington Streets, which form the main thoroughfares of the city.

And what is causing local citizens, and local merchants particular anguish is the fact that the job is at the moment more than a year behind schedule, and will not be completed for still another year, at least. A state legislative committee has already investigated the situation.

The reasons for the delay are many. They include four-way responsibility for the project, the extreme difficulty of working under the conditions imposed by the location of the present line, the need for maintaining service on the railroad—even the death of the principal of the contracting firm.

• **Witches to switches**—Probably more famous in the public mind for the witch hunts that blotted its history in the early 17th Century than for its industries, its seaport and fishing, Salem is just 16 miles north of Boston's North Station, and at the center of a very large residential and manufacturing area.

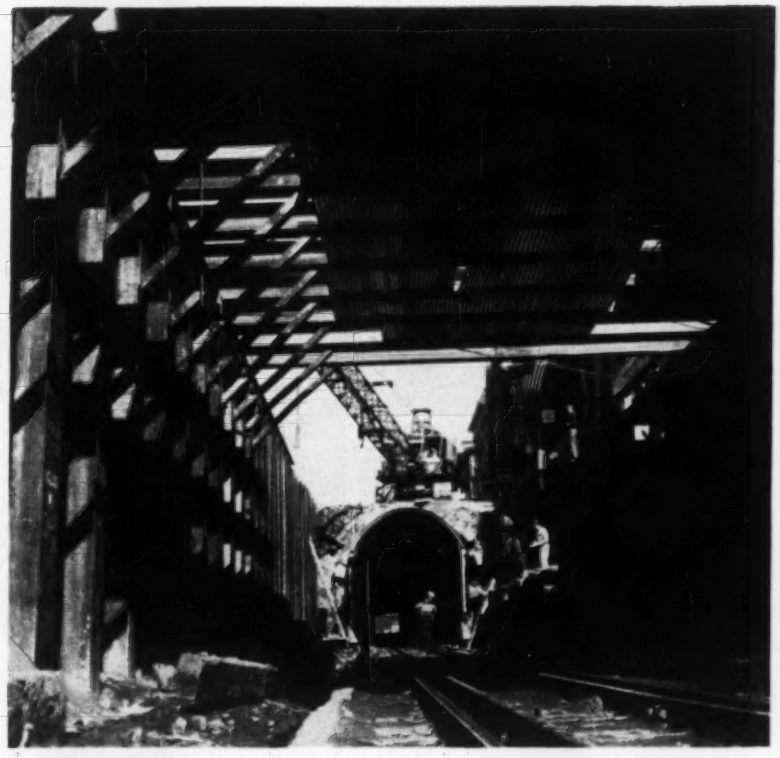
Somewhere in the late 1830's, a predecessor of the present Boston & Maine obtained permission from the city to move the Town Hall from its location in the center of what is now Washington St, and to put a 600 ft single-track tunnel through the slight hill on which the center of the city is built.

This mound of glacial deposit, its highest point 26 ft above sea level, was accordingly pierced by a beautifully hand-built granite keystone arch tunnel, built by cut and cover methods, providing a 15 ft 6 in. clearance at the underside of the arch above the base of rail, and 16 ft in width between side walls. The tunnel was laid up of hand cut blocks, some of them extremely large, and for the most part without mortar. It was then backfilled with earth to a depth of less than a foot in some areas, and the street paving of cobblestones placed directly above.

The tunnel was extended 300 ft to the north in 1941, to a point where the rail emerges on the flatlands of the North River, which forms one part of Salem's harbor. However, this left two grade crossings on the south side of the city as trains approached the tunnel. (The railroad has double-track lines approaching the tube from both ends switching onto the single track for the tunnel section.)

The old railroad station, straddling the track in the center of the street, was a rather typical stone monument with two towers, reminiscent of earlier and quite pretentious railway days.

• **Elimination plans**—B & M puts a total of more than 60 trains a day through the existing tunnel, serving Salem and such communities as Danvers, Rockport and Portsmouth. The resulting interruption to vehicular traffic at the two crossings on the south side of the city was the subject of growing concern to city and state officials. In early 1955, a plan was completed, and approved by all concerned.



OLD TUNNEL was within a foot of street surface at some points, too narrow for modern trains. New one will be behind soldier piles at left, in deeper cut.

A Year to Go

Under this plan, the existing tunnel is to be torn out for most of its length, and replaced with a new tube, 28 ft below the street—at top of rail—a maximum of 13 ft deeper than the old. An open cut section would take the railroad well below the street level at the two major crossings to the south.

The project thus will have a total length of 4,200 ft, of which 1,850 ft will be tunnel.

Also included is a new railroad station, in the open-cut section to the south of the existing station.

The new tunnel, to have a square section, is to be built of heavy steel frames, encased in concrete and providing inside clearances of 18 ft in width and 19 ft in height to accommodate the railroad's newer diesel equipment and special freight cargoes.

Under the plan approved in 1955, the city pays part of the land acquisition and damage costs, the state the remainder. The railroad contributes land for a new parking lot, the new passenger station, and work by its own forces valued at more than $1.5 million having to do with laying of rails, providing new passenger yards, installing signalling systems, and the like.

A construction contract for $5.5 million was let Sept. 7, 1955 to Farina Bros., Inc., of Newton, Mass.

• **Construction start**—There was one major associated job in the program, which involved the very flat area to the north of the tunnel. Here, the single track divides into a broad "Y" with one branch running northwestward and the other northeastward. An old roundhouse, now used for secondary maintenance and storage, and a signal tower stand on this site.

Both this area and the tunnel mouth are only a few feet above the level of the water of North River, and railroad men feared that heavy northeast storms could flood the tunnel and the yard area and knock out service. To prevent such a flood, the state approved construction of a 4-ft-high seawall along the river bank, with a tide gate to control the flow from upstream areas.

Another early step was to remedy the problem presented by the business buildings, the city hall and the old court house which front on Washington St. Many of these structures have virtually no foundations at all, standing on spread footings or loose stone foundations on the sand and gravel that made up the central hill.

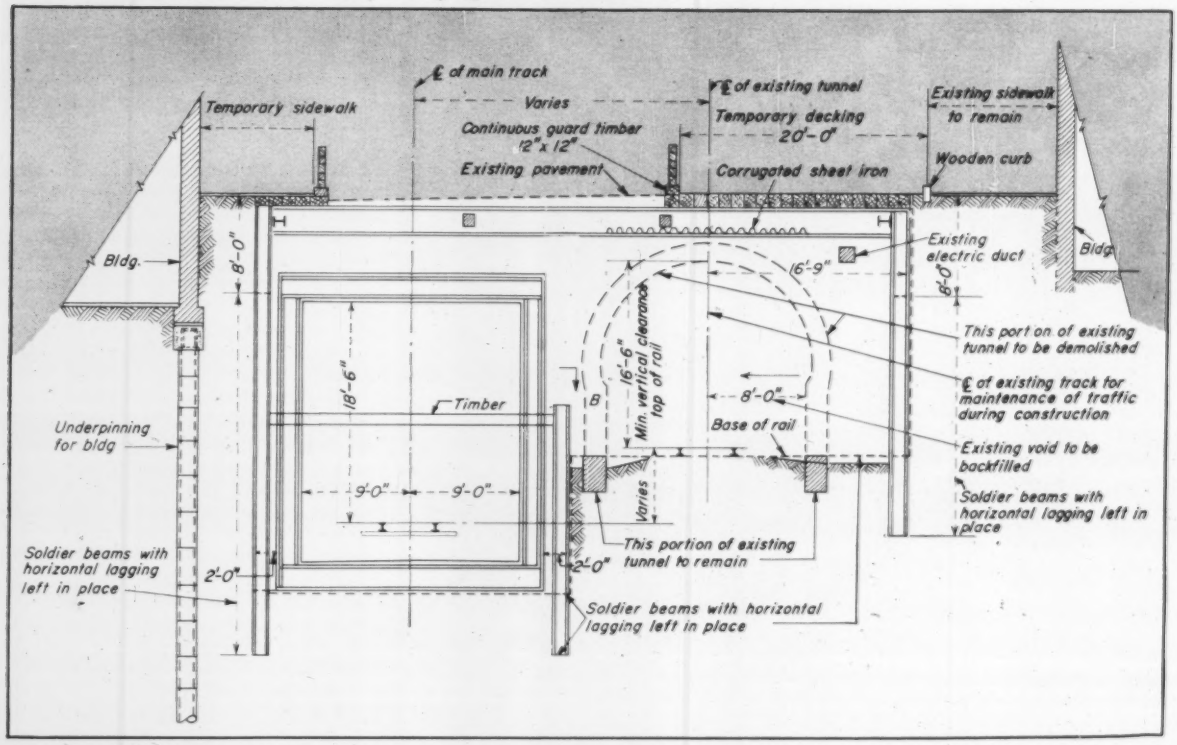
First step for Farina, therefore, was to let a subcontract to Spencer, White & Prentiss of New York to underpin virtually every building adjacent to the new tunnel on the west side of Washington Street, a four-block stretch. This called for a trench, in some places 15 ft deep next to the curb-line, through which the subcontractor was able to reach the foundations. In most cases the buildings were underpinned by placing reinforced concrete grade beams, supported on piles driven to firm material.

At the south end of the project, where the railroad approaches on what is now ground level, Farina started to excavate for the open-cut section.

Railroad records show most of the area to the south of the city was once marshland, tidal flats, or open water, and the original railroad line, in the early 1800's, approached the city on a wood trestle. In later years the trestle simply had been filled in over the wood piles, and the general level of the

NEW STATION will consist of platforms in this open cut section, south of city's center. Double track at this point will become single track at tunnel entrance.

. . . Railroad tunnel: Everything gets moved



CONSTRUCTION PLAN indicates position of old and new tunnels, methods suggested by engineers for procedure. Adjoining buildings were underpinned with cast-in-place concrete piles. Pile shells were installed in short lengths by hydraulic jacks.

ground in the area raised by several feet. A railroad yard with considerable trackage had been placed to the west of the track, and a large conduit, 4 ft 6 in. square in section, had been installed to carry off storm waters.

While the contractor was getting into these operations, the railroad went ahead to demolish the old stone battlements of its station and removed more than half of the original building so that the main line tracks could be moved to the east. This was done to permit the contractor to go ahead without disturbing railroad operations. Tracks in the yard to the south of the city were also moved over, this time to the west of the existing trackage.

• **Bracing problems**—Next step had to be the construction of bracing for the sides of the excavation, with particular attention being paid to the extremely heavy moving loads imposed by an operating railroad.

Soldier beams were driven roughly 5 ft on centers for the entire length of the project, with space between the beams filled with wood lagging which will be left in place when the project is completed. Bridging the excavation are beams welded to tops of the soldier piles to maintain alignment, and two sets of steel beam struts brace the sides during excavation.

This operation necessitated tearing up more than half of Washington Street, from its south end to the center of the business district, just above the City Hall. To provide access to the stores along the business street, a temporary wood sidewalk, bounded on its outer edge by an 8 ft high, tightly built board fence, was constructed.

This effectively hid the store fronts from view of opposite sides of the street. One alley, and seven side streets were blocked off completely to motor traffic.

• **Protecting trains**—In addition to the discomfiture of the merchants, the contractor had to contend with rerouting of a city sewer which crossed Washington Street and the much more complex problems imposed on him by the operation of the railroad. Flagmen and conductors, who under railroad requirements must be qualified under operating rules, are supplied by the railroad, but paid by the contractor.

One of the B&M's many requirements for safety was the construction of a steel plate shield, 34 ft long and supported on curved steel members, to slide into the entrance to the old tunnel and be moved back with it (on an independent set of rails) as the old tunnel is removed.

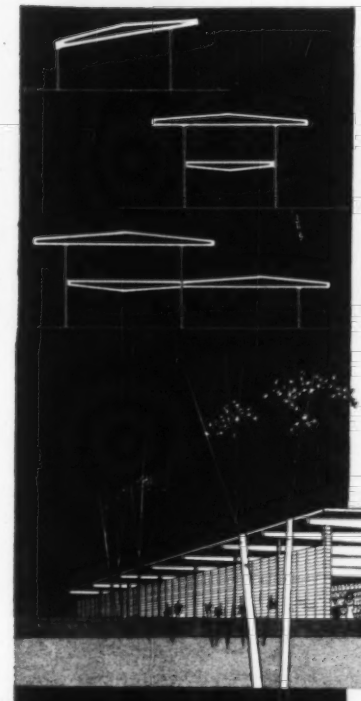
This was done to prevent material falling on the track and on operating trains, but the tolerances were so tight that some of the railroad's equipment had only 2 in. of clearance below the shield invert. As a result the railroad was forced to re-route some of its higher freight cars which could not pass through the shield.

Moreover, the railroad severely limits the contractor as to material that may be placed or handled on or above the operating track. For example, it would not permit use of cranes with a 50 ft boom, standing directly atop the invert of the old tunnel, without the provision of the shield mentioned above. Nor could the contractor's operations in any way interfere with the operation of the complex signalling system that controls the single track section.

• **Tight quarters**—Another difficulty for the contractor has been the extremely close tolerance under which he must operate within the width of the city street.

For example, after the temporary falsework has been placed and the excavation completed, the next step is to cast a 6 in. concrete slab (or "mud mat") to receive the four-ply membrane waterproofing, which is covered with brick and mastic protection.

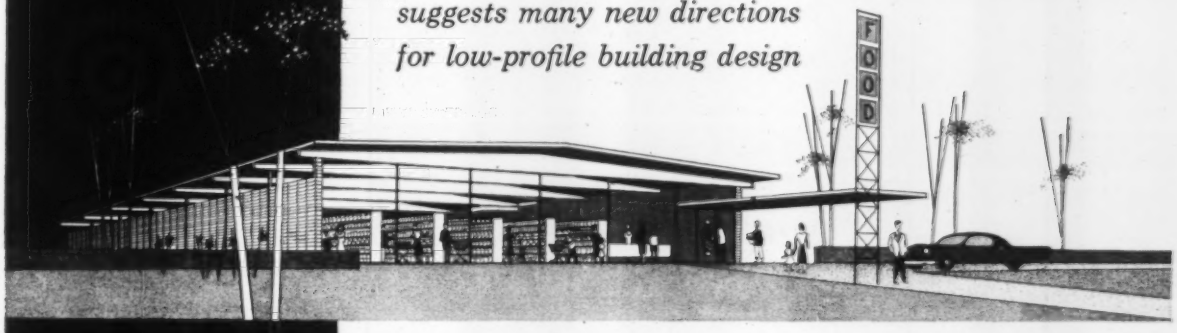
Then the steel frames for the tunnel are erected—24 to 33 in. WF beams in the base, 14 to 21 in. WF beams in the

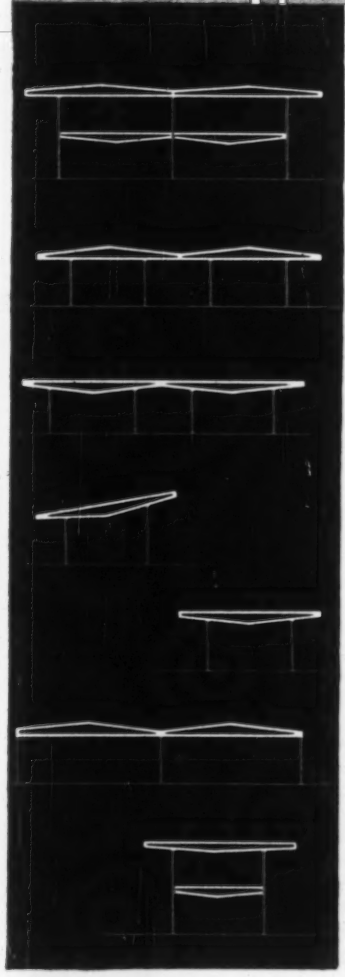


New STEELCRAFT

Steel Slope-Beam Roof System

suggests many new directions for low-profile building design





Unlimited "idea potential"—The Slope-Beam Roof System lends itself to innumerable interesting arrangements, allowing complete freedom of treatment with concrete block, masonry, metal curtain wall and a wide variety of other materials. And, it can be used with all kinds of roof deck.

A "natural" for lean budgets—You save material costs and eliminate unnecessary weight because Slope-Beams require less steel than rolled sections for equivalent loads. Also, lighter Slope-Beams permit economies in columns and foundations, and the entire System can be erected at less cost.

Made to order . . . fast!—Completely integrated Slope-Beam Roof Systems are custom manufactured, even to the fraction of an inch. But, thanks to special production facilities, you can expect much faster delivery than you normally receive on rolled sections . . . often within 30 days.

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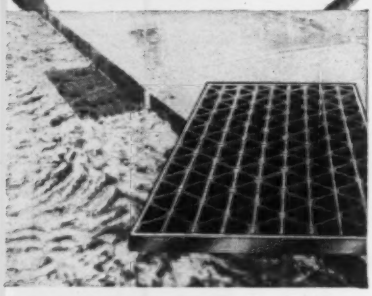
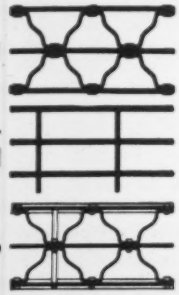
FLOODED HIGHWAYS HINDER TRAFFIC



OLD heavy cast iron draingrates, averaging at best 40% clear opening, often fail to carry off rain water fast enough during heavy downpours, resulting in flooded highways—particularly at underpasses. Also, cracked draingrates must be replaced.

With open steel mesh draingrates, larger clear openings reduce the likelihood of flooded highways considerably. Irving "Dryway" Draingrates are 75% open for greater drainage and are made of steel bars on edge, not subject to cracking.

Available in three basic designs:



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roof and 14 in. beams on the sides.

The sidewalls encasing the steel frame in the tunnel section are 24 in. thick and are waterproofed on the outside with four-ply membrane, which is, in turn, protected with a 4 in. concrete covering.

The walls and floor slab in the open section, south of the tunnel, are built of reinforced concrete, the walls varying from 3 to 6 in. thick at the base to 1 ft thick at the top.

In casting the sand (lean concrete) walls in the tunnel section, the contractor worked so close to his excavation line that he found great difficulty in placing the membrane waterproofing on the side walls, and finally had to re-excavate to get room to place the protective covering.

The open cut section is a U-shaped structure, consisting of two reinforced concrete retaining walls, connected to a reinforced concrete invert slab.

As in the tunnel section, the 6-in. concrete protection slab under the invert slab is topped with a four-ply bituminous membrane waterproofing of brick-in-mastic. The battered retaining walls are also protected with the membrane waterproofing, protected by a 4-in. sand slab. Ballast is placed on the invert slab to serve as the track bed.

Meanwhile, automobile traffic can move across Washington Street only at its lower end, and the contractor is being pushed hard by city officials to complete a section about halfway up Washington Street so that at least a temporary bridge can be put across to permit traffic to cross Essex Street from east to west near the City Hall.

• **Tunnel under tunnel**—Most difficult work ahead is in the last 100 ft of the tunnel, where the east wall of the new tunnel converges toward the center line of the old one. Since railroad traffic must be maintained, the plan is to drive piles below the existing rail so that it can be supported as a trestle while construction crews mine out the area under it.

Another feature will be the installation of a ventilation building which will extend halfway into an existing street that will have to be rerouted. The building will house ventilating and electrical equipment for use as needed. A pump house is also being installed, equipped with three 1,500 gpm and one 200 gpm float controlled pumps, to take care of normal drainage and provide capacity in the event—which is considered to be most unlikely—of flooding the tunnel.

• **New station**—The new station, in the open-cut section south of the present

PROTECTION for trains during construction is provided by metal shield, on rollers, moved as old tunnel is demolished.

facility, will consist of two platforms, one on either side of the double tracks in this area, with metal awnings over the tracks. A pedestrian bridge, and metal stairs leading down from the street level, also covered against the ice and snow of winter in the area are included with the new station.

Part of the program, also, will be construction on railroad land of parking lot to accommodate several hundred cars, and regrading of a number of surrounding streets.

• **Administration**—One of the principal daily headaches for all concerned has been the four-way administration of the job.

The over-all project is under the charge of the Department of Public Works of Massachusetts, but city officials, the railroad and the contractor are, of course, involved in the many decisions that must be made.

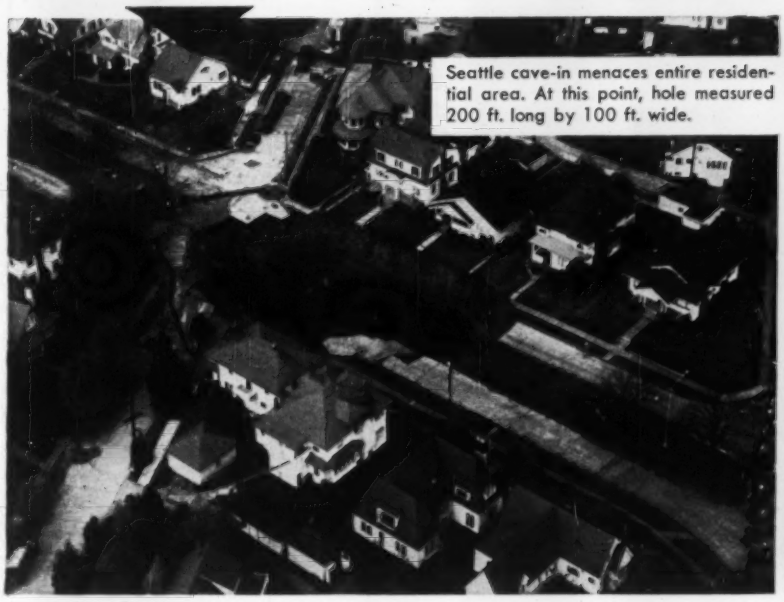
The problem of obtaining approvals on all sides is time-consuming and difficult. For example, even though the project is just 16 miles from his main headquarters in Boston, F. R. Spofford, B & M assistant chief engineer, has found it necessary to maintain a resident engineer on the job.

Another difficulty for the contractor has been lack of sufficient men—particularly carpenters—and inability to obtain steel for piling. Cramped quarters that limit the use of machines, supervisory difficulties within his own organization (complicated by the recent death of Anthony Farina, president) and the delays in payments—due in part to slowness of the work progress—add to the Farina Company's woes.

Singstad & Baillie of New York designed the project.

Construction is being performed under supervision by the state.

CAVE-IN CALLS FOR QUICK ACTION



Seattle cave-in menaces entire residential area. At this point, hole measured 200 ft. long by 100 ft. wide.

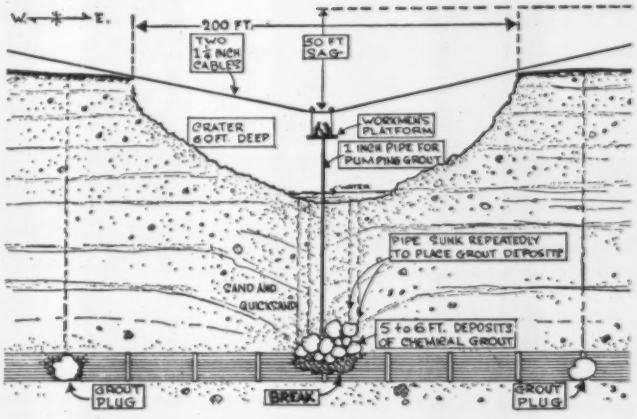
Working from swinging platform, Intrusion-Prepakt crews stabilize loose material by injecting chemical grout through pipes driven into the bottom of the hole. Flexible lines deliver grout from mixer and pump.

Emergency Grouting by Intrusion-Prepakt Halts Damage from Broken Sewer

Without warning, the city of Seattle was faced with an unexplained cave-in on Ravenna Boulevard. The size of the hole increased at an alarming rate despite the city's round-the-clock efforts to stop its progress. Shoring was attempted but failed when the 70 foot piling was swallowed up. Concrete pavement, sidewalks, trees and utility poles alike were consumed by the ever-widening crater. Homes in the vicinity were threatened, and a larger area suffered ruptured utility services.

The appearance of water in the 60 foot deep hole confirmed early fears of a collapsed trunk sewer, 140 feet below the street. Unable to cope with this creeping destruction, city authorities made a series of quick decisions. A general contractor was retained to repair the damaged sewer. The contractor called in INTRUSION-PREPAKT to plug the sewer with cement-sand grout and thus divert the flow into a hastily prepared by-pass. I-P crews then descended into the yawning pit on a cableway-supported platform, and from this precarious position, pressure grouted the loose material at the bottom of the hole with stabilizing chemicals. This halted further settling and caving, and permitted the hole to be filled to the original grade.

The Seattle cave-in is a dramatic example of INTRUSION-PREPAKT's rarely publicized ability to move in on emergencies—fast. When circumstances call for prompt, effective action, the resourcefulness and experience of I-P's world-wide organization are as close as your telephone. Immediately available is the same service that has given I-P recognized leadership in the fields of concrete construction, maintenance and planned stabilization programs. For information, contact INTRUSION-PREPAKT, INCORPORATED, 568-N Union Commerce Bldg., Cleveland 14, Ohio. In Canada: INTRUSION-PREPAKT LTD., 159 Bay Street, Toronto, Ontario.



Cross section illustrates how Intrusion grout plugs blocked-off sewer and permitted chemical grouting of loose material above break.

City Engineer—Roy W. Morse • General Contractor—MacRae Bros. Construction Co.

Photos courtesy The Seattle Times • Drawing courtesy Seattle Post-Intelligencer.

INTRUSION-PREPAKT, INC.

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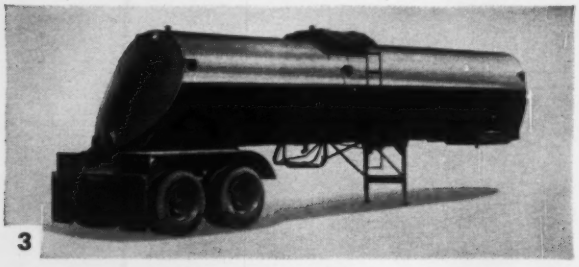
All The Hauling Equipment You

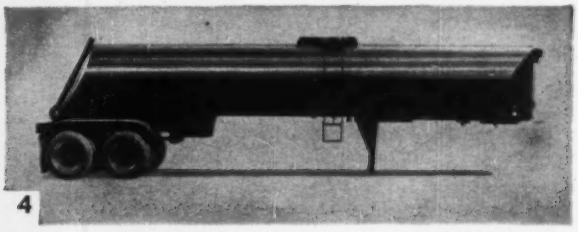
1

New cable dumps—Designed to resist shock loads and minimize vibration, the latest Fruehauf-Schonrock Cable Dump remains the lowest cost, most economically maintained sand, gravel, and dirt carrier in the business. A semi does the work of a hoist combination, without costly hoist mechanisms. It pulls itself or tractor from ruts, operates in tight quarters with tractor turned up to 90° from Trailer.



3

Aluminum hot commodity tanks—8700 pounds complete is the light, light weight of an all aluminum 6400 gallon Fruehauf asphalt tank insulated and equipped for 400° temperatures. Exclusive Fruehauf automatic welding processes are typical of the advanced, unmatched quality of Fruehauf tanks.



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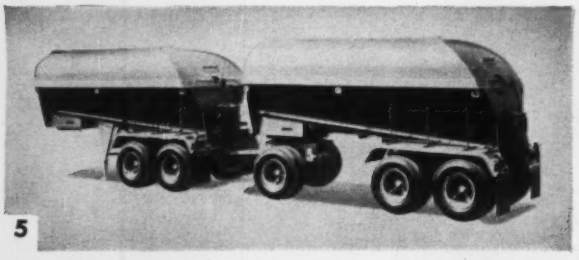
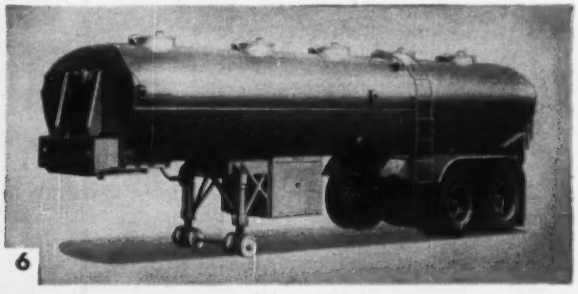
Steel hot commodity tanks—Fully insulated hot asphalt tanks with steel frames and steel or aluminum jackets can be equipped for even temperatures up to 400° and with a wide range of optional features. Units in a wide range of capacities are kept in stock for immediate delivery.



5

Airslide* bulk cement tanks—Fruehauf Airslide units are adaptable to both semi and train operation. Initial cost and maintenance are low because of the mechanical simplicity. Gravity does most of the discharge work with the aid of air blown through angled fabric panels. *(*Airslide—Trademark, Fuller Co.)*

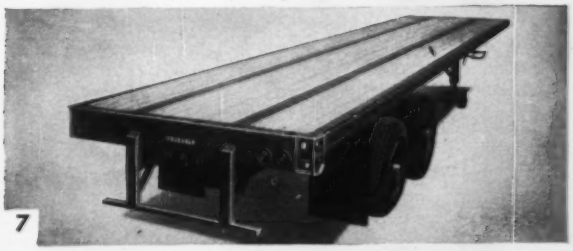


6

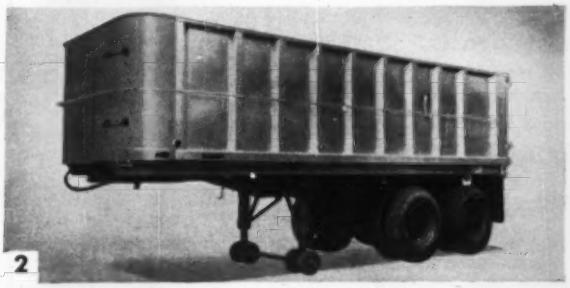
Screw type bulk cement tanks—Up to 10% *extra* bulk cement can be hauled in Fruehauf's new "Twin and a half" screw-type Bulk Cement Trailer because of its drop-frame construction. Discharge is rapid, cost and upkeep economical, because material is moved by twin front screws and a single rear screw.

Need For Any Construction Job!

The Trailers designed for the biggest payloads are all Fruehaufs

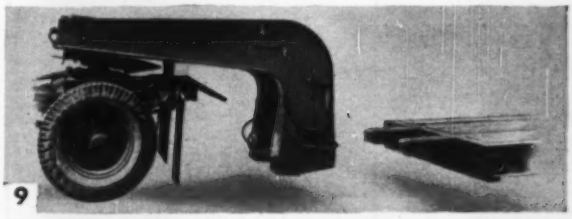


New lightweight platforms—Lighter by up to 1200 pounds than previous steel platforms, the new heavy duty Fruehauf Workhorse utilizes 19½" deep steel I beams as direct supporting members for lift trucks and loads, has full width I beam cross-members for added structural strength.

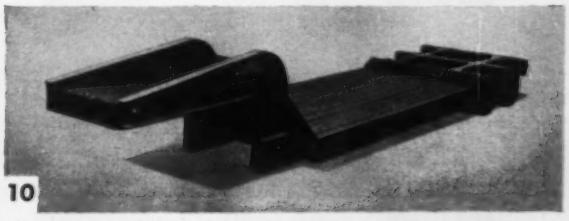


New hoist dumps—Front-mounted hydraulic telescopic hoist dumps are designed by Fruehauf in capacities up to 13 cubic yards of sand or gravel, 25 of rock. Tandem units feature the "no-hop" P2 underconstruction, deep I beam frame members, 21′, 22′, 24′, and 26′ bodies, several chassis lengths, and ICC lights.

Low cost multi-purpose platforms—Quality features at low, low prices distinguish this husky, all purpose flat bed, which is ideal for hauling heavy builders' materials, light machinery, and bulky installations. Single and tandem axle units are available, from 27′ to 42′ long.



Winchless removable gooseneck carryalls—No hydraulic assists or winches are required on these Fruehauf carryalls in capacities up to 50 tons! Front end loading and unloading of huge shovels is reduced to minutes, and coupling or uncoupling is easily handled by a driver, without shock to loads.



Single and double drop carryalls—Fruehauf builds the world's huskiest line of carryalls of all types in a full range of capacities. Single and double drop units for loads of 25 to 75 tons are always ready for quick delivery and specials for larger tonnages are designed to your specifications.

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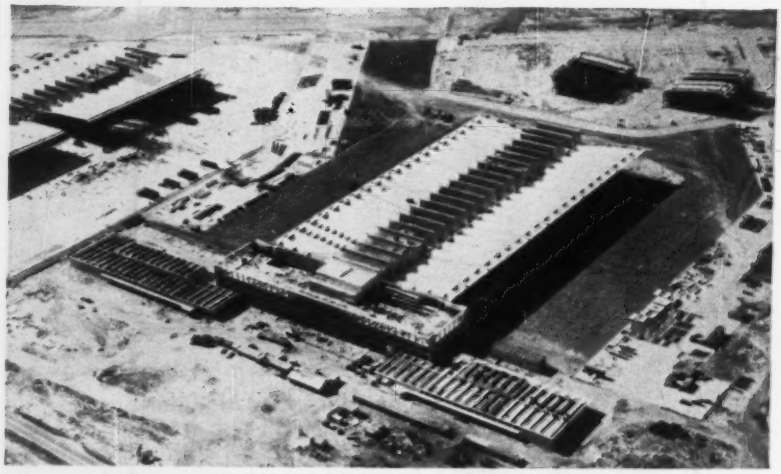
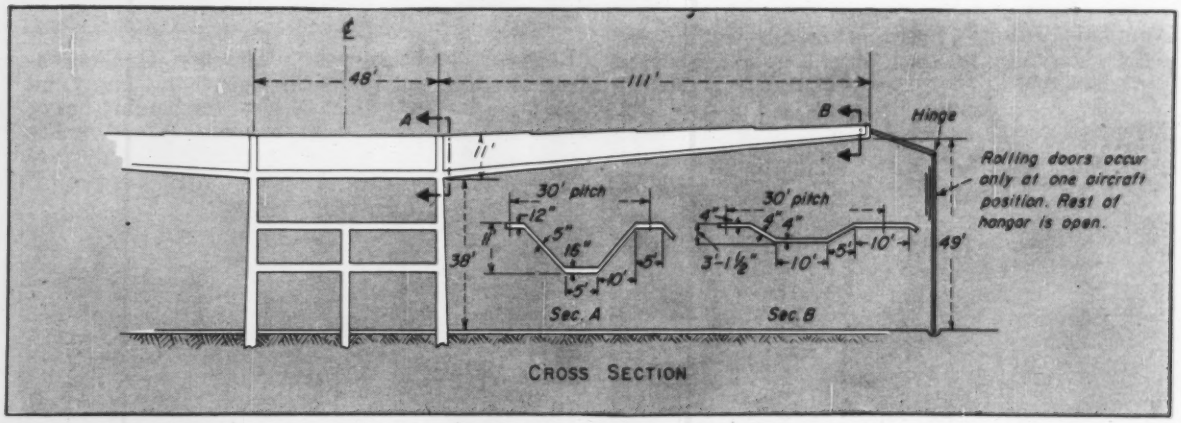


A structural type that didn't exist three years ago is exemplified by a series of new reinforced concrete hangars with folded plate roofs. The five already built or now under construction have inspired some ideas on formwork as unusual as the roofs themselves.

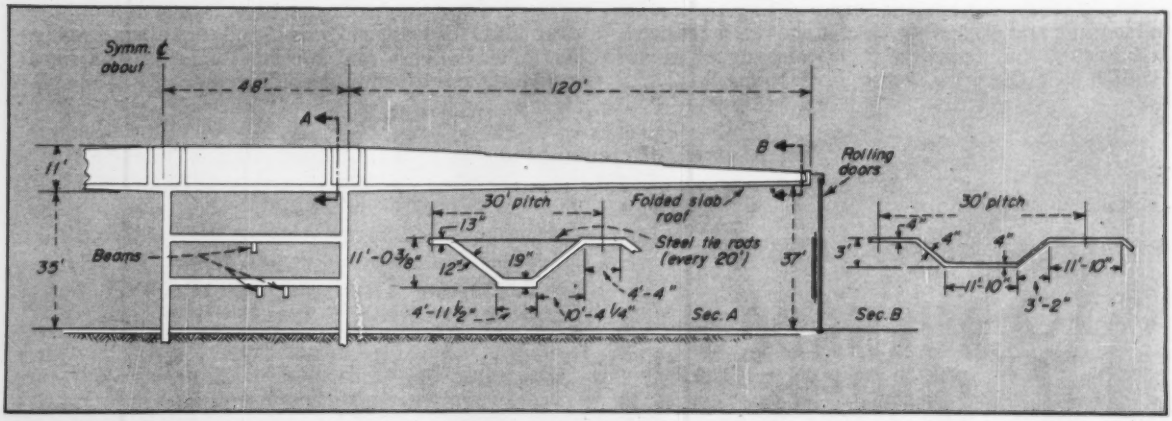
When construction began on a new hangar for Trans World Airlines two years ago at Kansas City's Mid-Continent International Airport, there was no other building like it anywhere. Its unique feature was a long-span, folded-plate concrete, suspended roof spreading wing-like on either side of a central structure (ENR Jan. 26, 1956, p. 44). Today, with the facility in use little more than a year, four other hangars modeled along the same lines are within months of completion.

The structural scheme of these hangars was conceived in the office of Ammann & Whitney, New York consulting engineers, who were design principals on two of the projects and structural consultants on the others.

Apart from their basic similarity, the five hangars differ widely. Length, height, shape, size and other characteristics were individually tailored for particular requirements. Construction procedures have varied greatly too, resulting in an imaginatively conceived



NATIONAL AIRLINES hangar in Miami has no roof cables but gains the required additional stiffness and strength with deeper folds and thicker sections. Some bays of the core structure are nose docks. Tails project outdoors except in washing area.



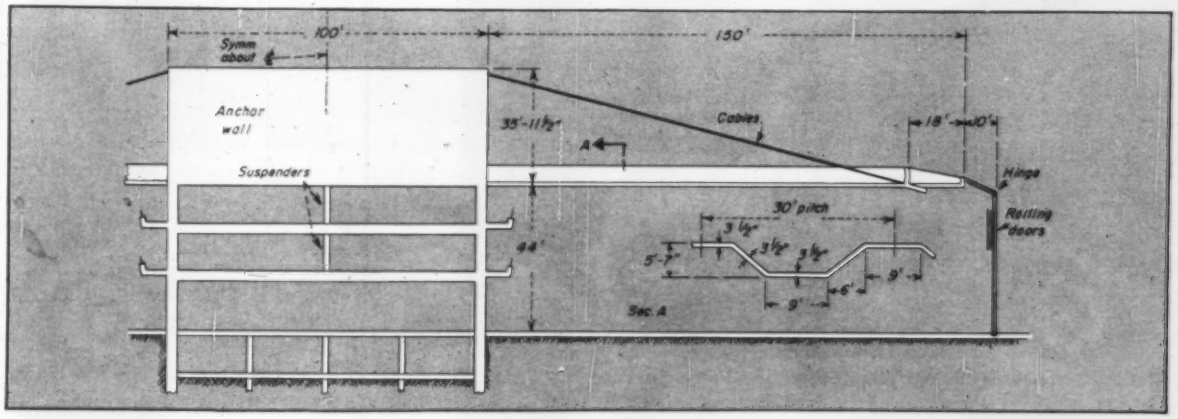
MOHAWK AIRLINES hangar in Utica, N. Y., has cantilevers 9 ft longer than those on the National job—a few feet lower, too, being intended only for existing propeller-driven planes. Most cantilevers are yet to be concreted on this job.

Hangars Spread Folded Slab Wings

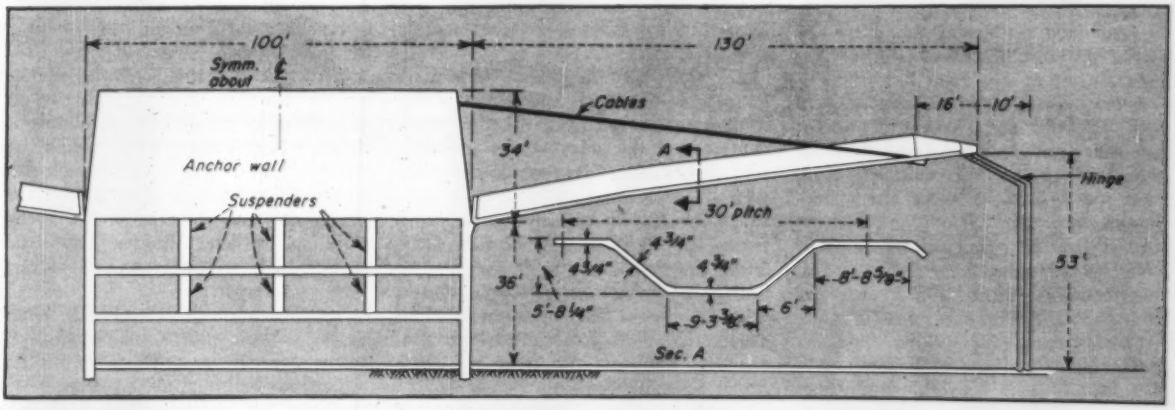
array of traveling forms. Three fundamentally different methods of raising and lowering the forms have been used. Basic structural design of the roof also differs from hangar to hangar in one respect: Some are pure cantilever while others are partly supported by cables.

The Kansas City hangar and two of the later ones incorporate cable suspension systems, in which points near the outer ends of the roof slabs are tied back with overhead cables to anchor walls that rise about 30 ft above the roof of the central building. The other two hangars have true cantilever roofs.

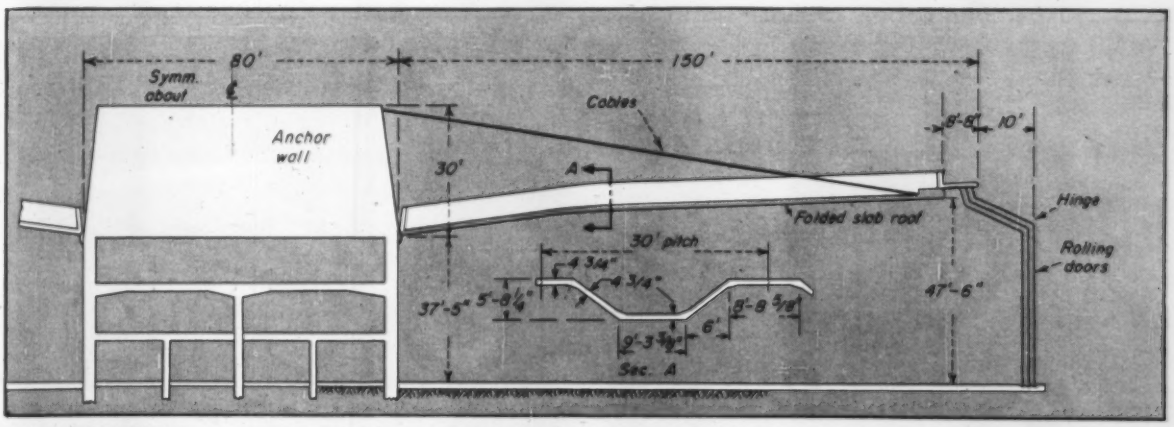
When the Kansas City project had been under way about six months, the second of the series, a modified version



TWA KANSAS CITY, first of the new-type hangars to be built, was partly occupied early last year and completed later. An overhaul facility, it provides tail clearance for new jetliners anywhere under the roof. Note suspended floors in core structure.

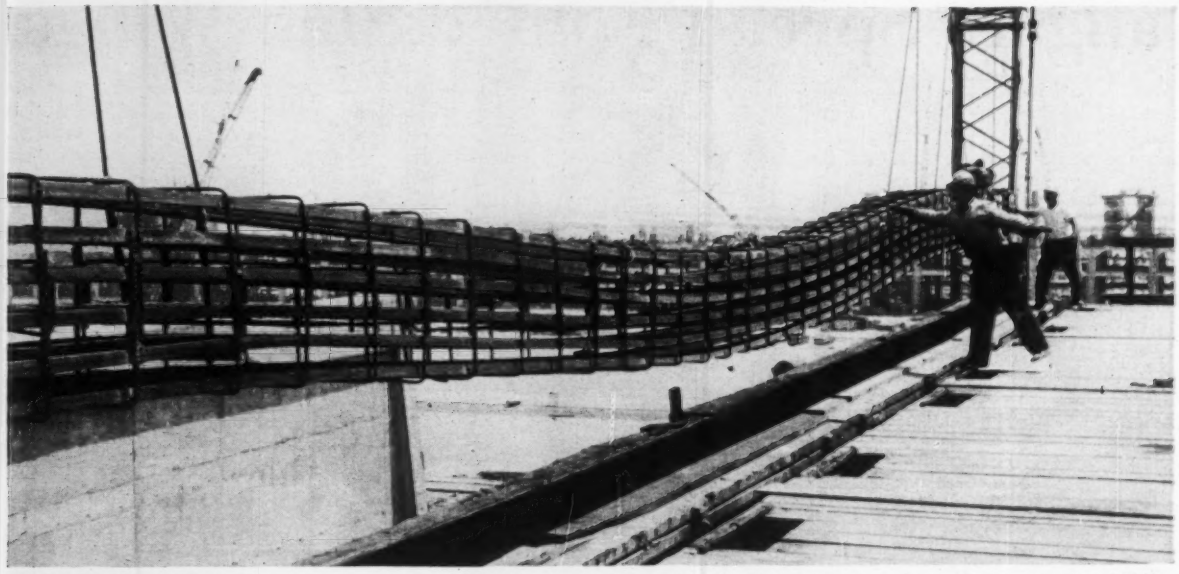


PAN AMERICAN maintenance hangar in New York City has tail clearance for jetliners in a 20 or 30 ft wide strip along the sides. Some of the roof spaces between anchor walls are enclosed to house mechanical equipment.



TWA NEW YORK is a maintenance facility with tail clearance for jetliners 100 ft in from the sides. In the air photo on the opposite page, this structure and the Pan American hangar appear, at left and center, respectively.

. . . Why cross-section shapes differ



ANCHOR-WALL STEEL was placed in the forms atop the Pan American hangar by a crane after being fabricated on the ground. Each of the twenty-four 1¾ in. square bars in the cage is a 100 ft. long continuous unit, with thermite-welded splices.

for National Airlines, was begun in Miami (ENR Feb. 21, p. 108). In this building, no cables were used. Instead, the roof was made continuous over a central structure 48 ft wide. The cantilevers on either side span 111 ft.

A few months later, two more were begun—another for TWA and one for Pan American World Airways, both at New York International Airport. Here long spans brought back the cable-suspension system. The TWA roof extends 150 ft on either side of an 80 ft wide anchor structure, and the Pan American roof spreads 130 ft each way from an anchor building 100 ft wide.

Fifth of the group, another cantilever much like the Miami project but with 120 ft spans, is a Mohawk Airlines hangar now under construction at Oneida County Airport, Utica, N. Y.

• **Why shapes differ**—Within the general form, there is considerable variation in cross-section shape among the five hangars for reasons concerned mainly with function and cost.

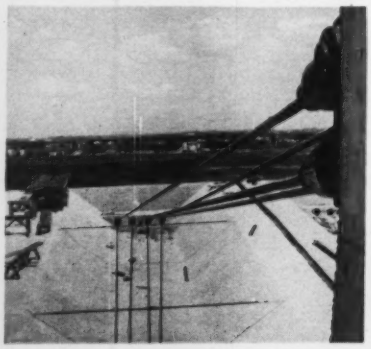
On both of the New York City hangars, for example, the planes of the roof slope upward from the core structure toward the sides of the building, while the Kansas City roof extends horizontally.

There are two reasons for the horizontal construction at Kansas City. First, the installation is an overhaul facility, involving on occasion almost complete rebuilding of aircraft. This means that some planes must be backed in, thus requiring the same tail clearance deep in the interior as at the perimeter. Second, the roof level of the three-story core structure happened to match approximately the hangar-roof level dictated by tail heights. Horizontal roof construction followed logically.

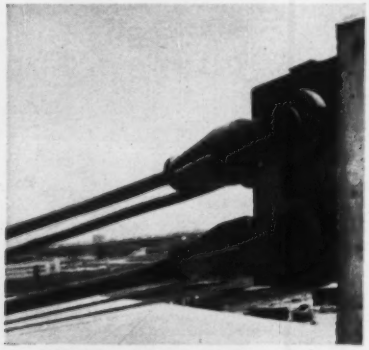
Pan American, on the other hand, in its maintenance hangar at New York, wanted tail clearance only far enough in from the sides of the building to permit bringing the planes completely indoors. This requirement affected a strip only 20 or 30 ft wide along each side. From there inward, the roof curves gently down to the roof of the anchor building, which, though also three stories high is lower than its Kansas City counterpart.

Requirements for the TWA hangar at New York, also a maintenance facility, were similar to those for the Pan American building except that TWA specified tail clearance 100 ft in from the perimeter, for additional flexibility

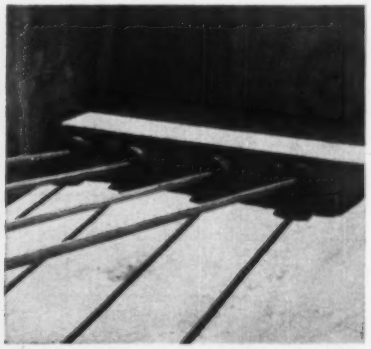
Suspension cables at close hand



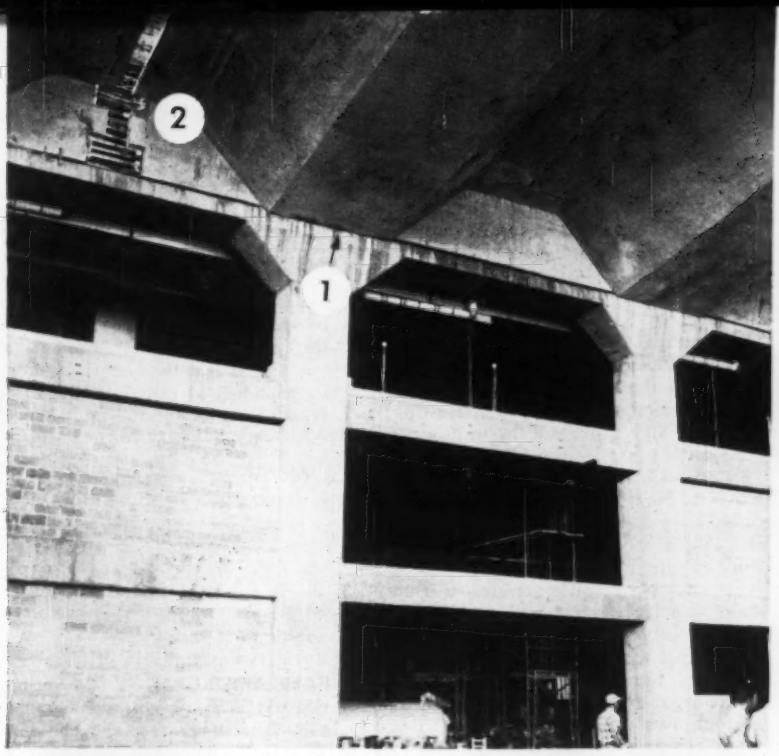
FOUR 2⅜ IN. CABLES run from each anchor wall to the bottom of a trough.



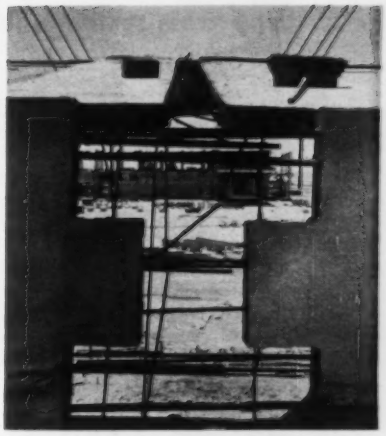
CABLE SOCKETS are fastened to the end plate of anchor-wall steel assembly.



CABLE DUCTS pass through concrete roof to anchorages on the under side.



ROOF MEETS WALL and forms a hinge (1). Construction joint (2) can be seen in greater detail in photo at right, taken from far side of the open diaphragm joint.



CONSTRUCTION JOINT between 60 ft pours on the Pan American job was about 8 in. wide in the slab but much wider in the diaphragm to permit greater length of steel overlap. Visible in the distance is the TWA hangar.

in aircraft handling. In this region, the roof slopes gradually downward from the outside edge for 100 ft and then drops sharply to the anchor building.

Both the National and Mohawk hangars have approximately horizontal roofs and both are pure cantilever. Relatively short spans of 111 ft and 120 ft, respectively, make the cantilevers economically feasible.

The National building was made high enough inside to accommodate the new jets now being manufactured, while the lower Mohawk structure is designed to accommodate only existing propeller-driven craft. National's hangar, being located in the mild climate of Miami, will be doorless for most of its perimeter, and the tails of the planes will be unsheltered. But one section—for washing planes—will have doors that add about 10 ft to the width along the cantilever direction so that craft can be brought completely under cover. Provision is made for adding doors full length along the sides in the future.

• **Freedom to deflect**—The door feature that adds 10 ft also frees the door to move with upward or downward deflections of the roof. The Pan American and both TWA hangars, as well as the National hangar, incorporate doors of this type. The doors are hinged along a horizontal line above their midheight. The lower part rises approximately straight up from the supporting tracks, which run along the floor about 10 ft outside a line directly beneath the roof edge, and the upper part slopes toward the roof edge, where it engages a rail. The hinges permit the doors to accommodate large roof deflections and still function normally. This is important because these long post-free roof spans deflect under design loads through arcs as long as 18 in.

• **Suspended slabs are thinner**—The absence of overhead cables in the National and Mohawk designs is compensated for in corrugation depth and concrete thickness. The cantilever slabs vary in corrugation depth from 11 ft at the anchor building to 3 ft at the outer tip and in concrete thickness from 19 in. to 4 in. In contrast, the cable-suspended slabs in the other three buildings have throughout most of their span length constant corrugation depths less than 6 ft and typical uniform concrete thicknesses of from 3½ in. to 4¾ in.

Traveling forms

Despite the numerous differences between the hangars, their length (300 ft to 800 ft) created a common need—for traveling formwork—and the corrugated roof design presented a common difficulty—the necessity of raising and lowering the forms considerable distances before lateral movement was possible.

One might reasonably suppose that under these circumstances, the contractors would adopt similar types of travelers. But not so. Each blazed his own trail, particularly in jacking methods for raising and lowering forms.

On the TWA job in Kansas City, MacDonald-Creighton, a joint venture of MacDonald Construction Co., St. Louis, and Footer & Creighton Co., Nashville, Tenn., employed hydraulic jacks. Fred Rowland Construction Co., Miami, used sand jacks and two-stage hydraulic jacking for the National Airlines job. Corbetta Construction Co., New York, subcontractor to Pan American for about 90% of the work on Pan Am's hangar at Idlewild, employed giant inclined planes. Grove, Shepherd, Wilson & Kruge, New York, general contractors on TWA's hangar at Idlewild, used sand jacks and single-stage hydraulic jacking. Thompson Construction Co., Albany, N. Y., general contractor on the Mohawk job, is employing steel scissors jacks.

• **TWA, Kansas City**—Like the traveling falsework for the four hangars to follow, the movable structure at TWA's Kansas City hangar supported forms for a pour 60 ft long (two corrugation cycles) along the building length and the full extent of the roof from the wall of the central building to the outer tip (150 ft in this case).

The K. C. traveler had two 150 ft long rows of steel trusses 30 ft c-c and six columns—three per row. Steel beams 60 ft long rested on the trusses, overhanging 15 ft on either side, and supported lighter steel trusses that carried, in turn, the metal forms. Two hydraulic jacks at each column raised and lowered the structure. Lifts were 6 ft. After the forms were elevated into pouring position, the columns were shored up with temporary extensions, which took the

. . . Why cross-section shapes differ

loads except during the jacking process.

The falsework was fabricated by Havens Structural Steel Co., Kansas City. The jacks were made by Rotary Lift Co., Memphis, Tenn.

• **National Airlines**—The falsework on the Miami job was roughly similar to that at Kansas City, but it was built of wood, with glued-laminated main members, and instead of six columns had only four, each with two jacks. A major difference from the K. C. operation was in the jacking distance required to make lateral movement of the traveler possible. To clear the bottom of the concrete corrugations, the Miami forms had to be dropped 11 ft.

For breaking bond and lowering the forms the first few inches, sand jacks at the column bases were drained. The remaining drop was accomplished in two stages. The forms were lowered halfway with the hydraulic jacks based several feet above ground on steel chairs, and the rest of the distance with the jacks based on pads at ground level. The procedure was reversed in raising the forms.

While the jacks were being shifted from chairs to ground (or vice versa) at the midpoint of the operation, the columns were supported by shear pins inserted in openings in structural members of the chairs. Shear pins, by the way, were used throughout the jacking to guard against sudden drops such as might occur in case of a blowout in the hydraulic system.

The forms were fabricated by Timber Structures, Inc., Portland, Ore. Hydraulic equipment was furnished by Elgood Hydraulics, Inc., of Brooklyn, N. Y.

• **Pan American**—Each of the travelers on the Pan American job consisted of two huge wedges of wood framework, one on top of the other. The pair comprised a roughly rectangular structure, with the forms on top. To raise the forms, the top section—anchored by horizontal cables to a deadman to prevent all motion except up or down—was elevated by forcing the bottom wedge farther beneath it. To lower the forms, the bottom wedge was allowed to return to its original position.

Both sections were mounted on flanged-wheel trucks. Tracks for the upper section were laid up and down the inclined top side of the bottom wedge, and the latter rolled on level tracks laid on timber pads on the ground.

Before the top section was lowered, the concrete load had to be transferred from the forms to the roof cables, which occur in groups of four every 30 ft (spacing of the corrugations). The transfer was accomplished by tensioning these cables to 176,000 lb each, which lifted the outer edge of the concrete 7½ in. clear of the forms.

During raising and lowering operations, a tracked crane attached by cables to the bottom section served as a tractor and anchor.

Corbetta's vice-president and chief engineer, Charles Prokop, came up with the idea of the wedges. The design was made by Herbert Fleischer, consulting engineer, New York, and the units were built on the job by the Corbetta firm.

• **TWA, New York**—In contrast to the densely framed falsework used on the Pan American job, the traveling falsework on the TWA site—a few hundred yards away across an open area—was an open structure, framed more like the Kansas City and Miami jobs, with long-span trusses and beams. Principal members were glued-laminated wood. There were eight columns in two rows of four, two rows of trusses 32 ft c-c, 60 ft beams about 12 ft c-c on top of the trusses, and wood joists for direct support of the form boards. Wood struts between the columns near the bases and diagonal steel rods in vertical and horizontal planes braced the structure.

Each post was equipped with a hydraulic jack with 72 in. stroke. The jacks were used to raise the entire structure to pouring position. Then steel tripods topped with filled sand jacks were placed beneath the posts to carry the load during concrete placement.

The forms were stripped in three ways: First, the roof cables were tensioned; next, the slab and forms were separated at the outer edge by small jacks; and finally, the sand jacks were drained, dropping the falsework 4½ in. At this point, the main jacks were used to raise the columns a trifle to permit removal of the tripods and subsequent lowering of the wheeled column bases to the rails.

The traveling forms, including jacks and tripods, were subcontracted to Timber Structures, Inc., who in turn subcontracted the hydraulic system to Elgood Hydraulics, Inc.

• **Mohawk**—Sawn timber was used for the Mohawk traveling falsework. The 60 x 120 ft structure has three main longitudinal truss bents 29 ft c-c, transverse purlin and bracing trusses, and 12 columns.

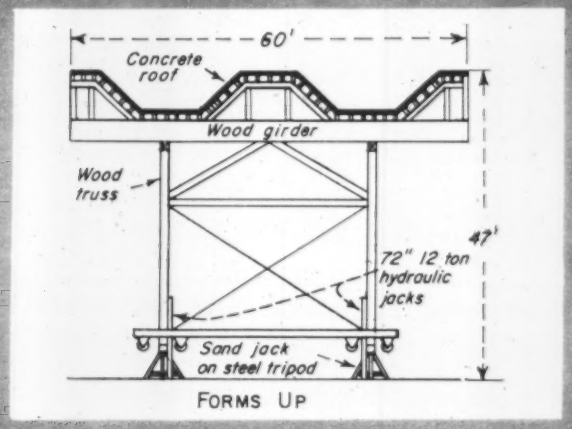
The unique raising and lowering equipment consists of 12 huge steel scissors jacks, which extend to a height of 28 ft 7 in. and retract to 17 ft 11 in.

Jacks and columns are adjacent to one another but are connected independently to the trusses. Extended, the jacks are longer in the vertical direction than the columns and, therefore, carry the loads—including the fresh concrete after a pour—when the forms are in pouring position. The columns, meanwhile, merely hang from the trusses, the wheeled trucks at the column bases suspended several feet above the rails. But when the traveler is lowered, the situation is reversed. The trucks are allowed to touch down on the rails and take the load, and then the jacks are freed at the base and retracted a few more inches, thereby

TWA NEW YORK — Glued-laminated wood falsework was raised 6 ft with 12 ton hydraulic jacks, one on each of eight columns, then shored up on tripods for the pour. Forms were lowered the same way, except that the first 4½ in. drop was accomplished by draining sand jacks atop tripods.

PAN AMERICAN—Wood-framed traveler was in two parts, top and bottom, with the common face an inclined plane. To raise the forms 6 ft, the wedge-shaped bottom section was forced under the top section, which was guyed to prevent lateral motion.

MOHAWK—Wood falsework is raised and lowered about 12 ft with steel scissors jacks, which carry the load—including fresh concrete—when the forms are up. In the down position, the falsework structure rests on the wood posts, and the jacks hang free.



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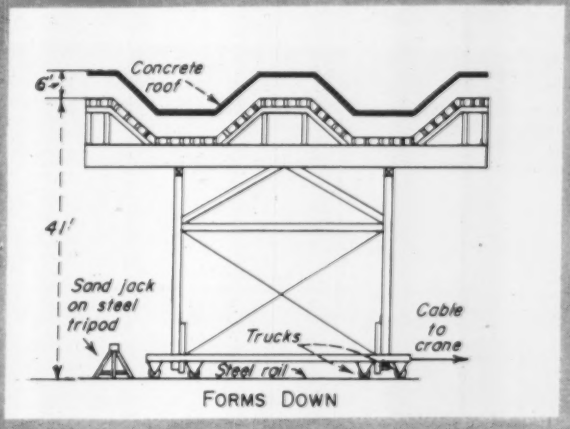

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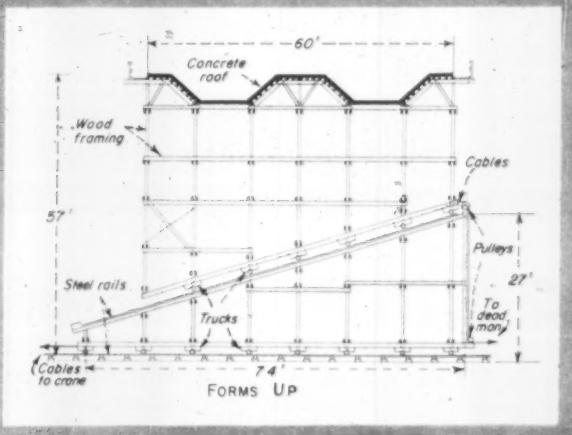

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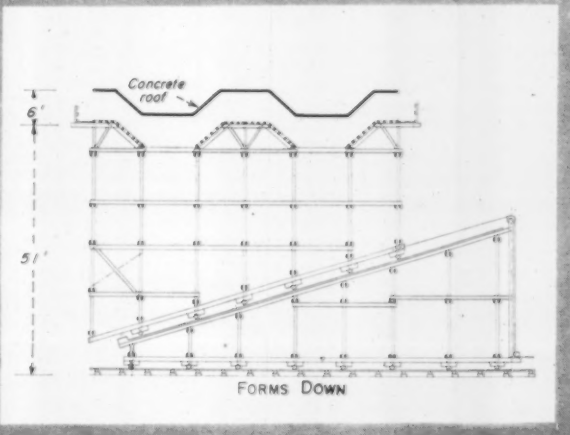

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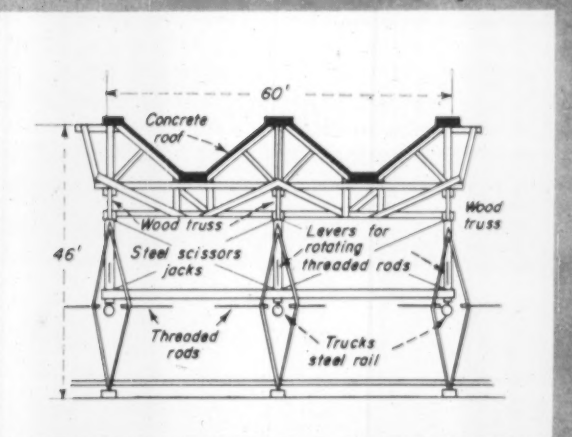
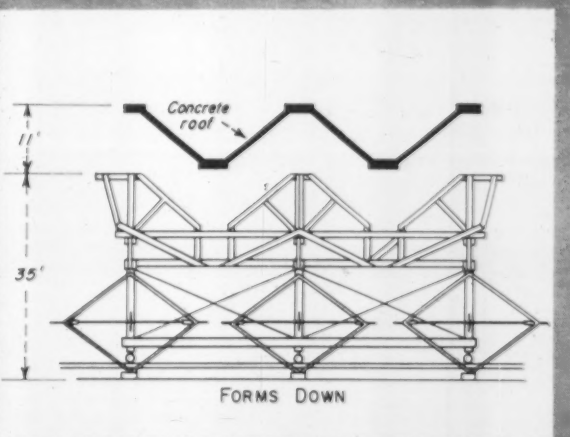




FORMS DOWN

lifting them clear of their supports.

Fabricated from light steel shapes, the jacks are diamond-shaped frames, resting on one corner and supporting the trusses on the diagonally opposite corner. Each jack consists of two parallel frames connected by bracing members. With their diagonal directions vertical and horizontal, the frames extend (or shorten) vertically when contracted (or extended) horizontally.

The horizontal contraction or expansion necessary for jacking is accomplished with threaded rods, 24 ft long, which are the horizontal diagonals of each frame. Threaded right-hand at one end and left-hand at the other, they engage nuts welded to the corners of the frames. Rotating the rods (spokes are provided as handles) varies the horizontal distance across the frames from 6 ft at maximum height to 23 ft at minimum height.

Cartwright & Morrison, of Holcomb, N. Y., furnished the traveling falsework, including the jacks, and assembled it on the hangar site. Frank Cartwright designed the jacks, and F. L. Hughes, Rochester, N. Y., fabricated them.

• **Designers**—Design principals on the hangars were: TWA, Kansas City—Burns & McDonnell, Kansas City engineers; National Airlines—Weed, Russell, Johnson & Associates, Miami architects; Pan American—Chester L. Churchill, Boston architect; TWA, New York, and Mohawk Airlines—Ammann & Whitney. Ammann & Whitney were also structural consultants to the principals on the first three jobs.

Moving 16,000 to 20,000 tons of

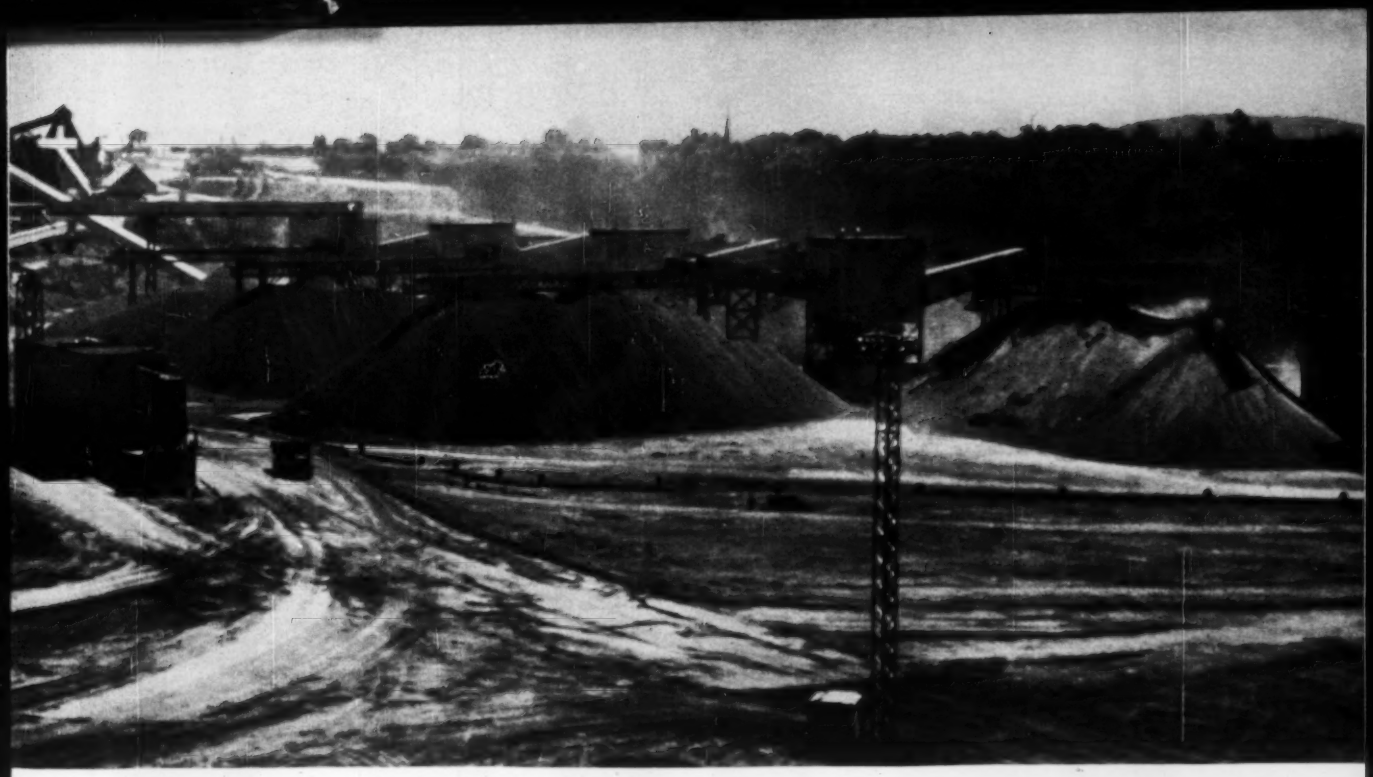
One of the biggest and most efficient stone-crushing plants on this continent is owned by The Highway Paving Company Limited of Montreal, which recently increased its capacity from over 400 tons per hour to over 1600 tons per hour.

Almost all of this operation is automatic. However, quadrupling production involved moving rock from quarry face to crusher in sufficient quantity to assure Highway Paving's booming operations of a continuous supply of crushed stone.

Seven Macks were given the job. Working under six-yard electric shovels, they shuttle from shovel to crusher, each making 10 trips an hour; the seven trucks average over 16,000 tons per day. The shovels really have to move to keep up with the hustling Macks, which are on the go 10 hours a day.

Highway Paving knows that its production of crushed stone is dependent on equipment that must maintain "the pace that kills", day after week after month, without crippling breakdowns. Their Macks

Mack being loaded by one of the six-yard electric shovels. The Macks take a brutal beating from the seven-ton impact of broken limestone dropped with each shovel pass . . . but come right back for more.



rock per 10 hour day with 7 trucks

have proved that they are worthy of this dependence. In fact, no other make of dump vehicle is used in this quarry.

Macks have everything it takes for dependable, profitable quarry, mine or construction hauling. Your nearest Mack representative will be glad to give you the names of Mack users in your area who are racking up new production records, with minimum down time and top economy. **Mack Trucks, Inc.**, Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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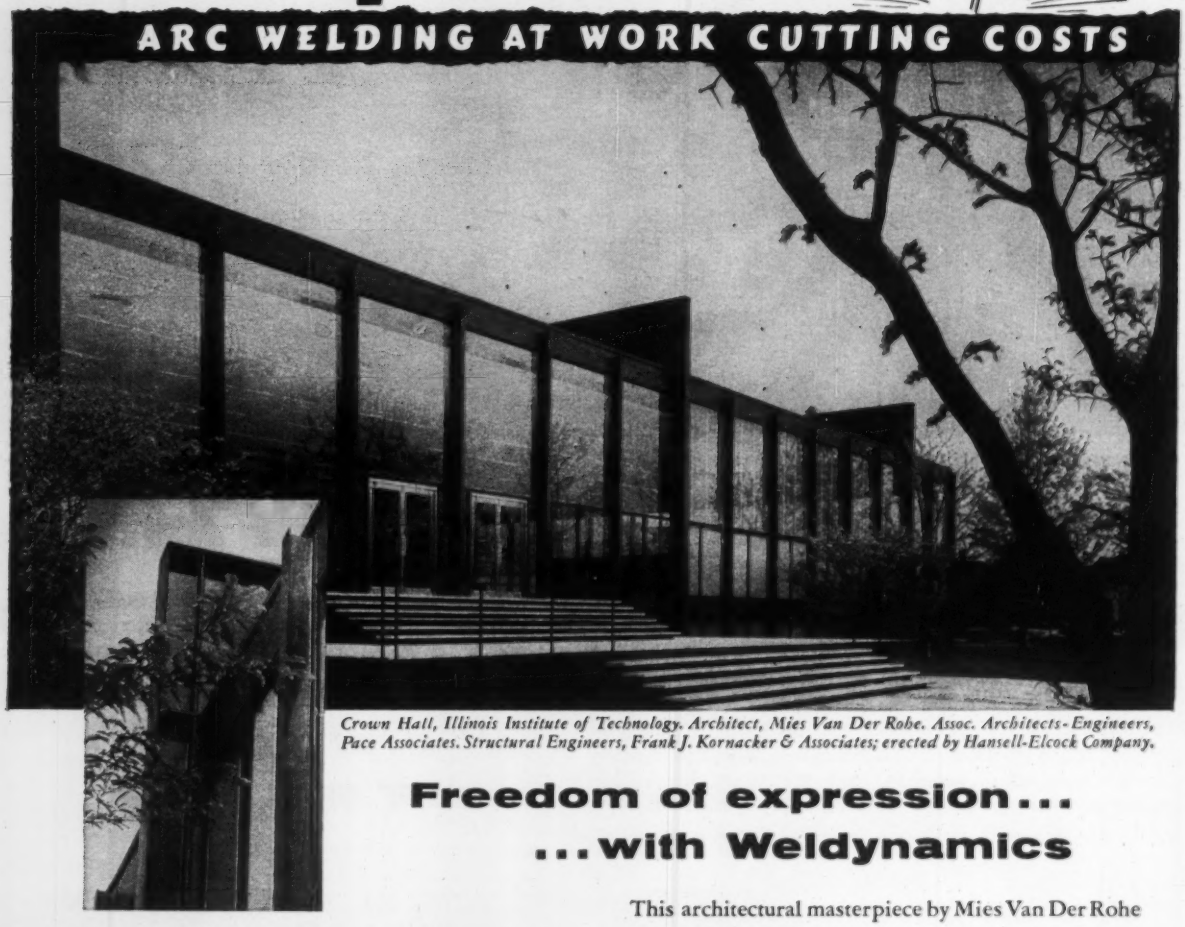
Dumping rock into Highway Paving's huge crusher which is so located that trucks can dump into it from both sides. Number of loads emptied into crusher are counted electronically, and tonnage crushed is determined by belt weighing equipment.

Weldynamics

ARC WELDING AT WORK CUTTING COSTS



Crown Hall, Illinois Institute of Technology. Architect, Mies Van Der Rohe. Assoc. Architects-Engineers, Pace Associates. Structural Engineers, Frank J. Kornacker & Associates; erected by Hansell-Elcock Company.

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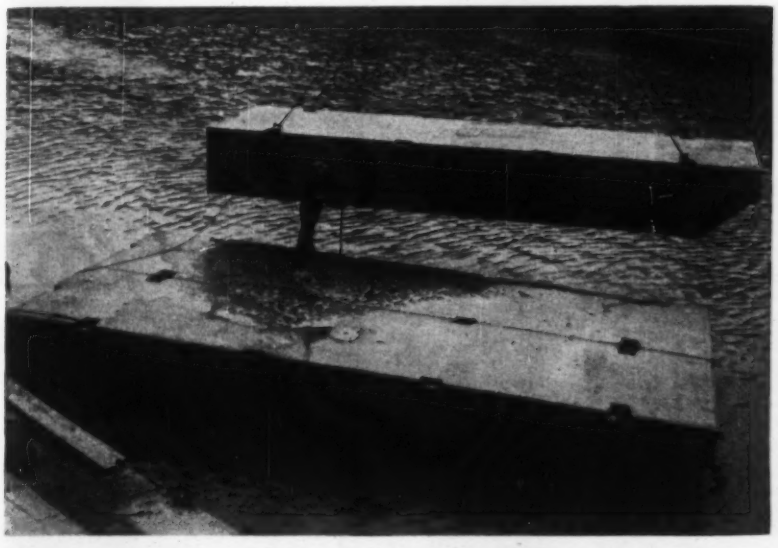
Tractor-Shovel Has Long Reach Boom

A long boom arrangement, obtainable on the 2 cu yd TL-20D Tractorloader, gives dumping clearances of 13 ft 10 in. under the hinge pin and 11 ft 4 in. under the bucket cutting edge.

At maximum height extension the boom has a minimum reach of 3 ft 3 in. At 9 ft dumping clearance, the minimum horizontal reach is 4 ft 5 in.

In addition to the special boom, the TL-20D Tractorloader includes all the features of the standard model.

It is recommended for use with materials weighing up to 2,700 lb per cu ft. TRACTOMOTIVE CORP., DEERFIELD, ILL.



Welded Steel Floats Are Portable

Portable all-welded steel floats designed especially for transporting contractor floating equipment, are now available with square ends, raked ends or a combination of both. Measuring 32 ft long, 8 ft wide and 4 ft deep, these "Porta-Floats" have a 9 in. draft, unloaded, and a maximum load capacity of 40,000 lb, with a 9 in. freeboard. Shipping weight is 12,000 lb.

Deck plating is ¼ in., while sides and bottom are $\frac{3}{16}$ in. All deck and bot-

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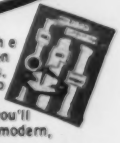

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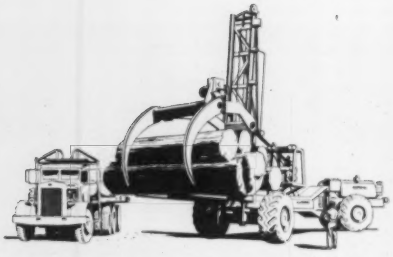

Electric Elephants

by R. G. LeTOURNEAU

Handling of materials is a vital part of manufacturing costs. This is especially true when materials have to be stored outside and space required does not permit your yard to be completely covered with a concrete slab. That's the way it is in mining and logging, and in a number of other industries.

Take the sawmill business for example. Our market research turned up the fact they needed a machine which could unload and handle a standard 25-ton truck-load of logs in one bite.

Machines rated at this capacity were available, but their small, high-pressure tires mired down hopelessly in the muddy yards. Then, too, their capacity rating was calculated at a point so close to the front wheels that they couldn't pick up the 25-ton loads at the work reach required. The only other equipment available was the slow, cumbersome tread machines whose tracks were so costly to maintain, and which were not designed for such purposes.

Of course, in some countries real live elephants have been used, but they aren't dependable enough or strong enough, and certainly not available enough to do this job. Our answer is an *electric elephant*. Research showed us the need for several sizes, so we make them with outdoor-work capacities ranging from 22 to 50 tons!

In a millyard, a giant truck rolls in from the woods, with a fifty-ton load for transfer to a rail car. As the brakes screech to a halt, an electric elephant moves across the yard up to the side of the load, and with infinite speed control (no gears to shift) slips its forks under the load and clamps its tusks over the top and down the back side. Squeezing the entire load in the grip of its arms, the monster gently lifts the load as if it were a sleeping babe, and swings around through the mud to place the logs on a flat car or in a storage pile. Time and distance are saved by piling them high.

We call this electric elephant a Log Stacker. Actually it's a giant fork truck mounted on huge rubber tires —7½ feet high. Forks run up and down the tilting mast and powered tusks encircle the load. Tusks can also have an extra powered joint if desired, to help in picking off single logs. Our field researchers have come up with other assignments which required different attachments, so if your "elephant" needs a specialized "trunk," just let us know.

The Stacker in a muddy yard during bad weather is something to see. Empty or loaded, it plows through mud, snow and over bumps and ruts as if something else were pulling it.

Its tremendous power comes from big DC electric gear motors that drive every wheel. Controls are electric, too. They let you handle 25 or 50 tons with about as much effort as you need to flick on a light switch.

Summing it up, our Stacker replaces an average of 5 men and 3 machines on a job, because it's made-to-order for this kind of work. With minor modification it may be made-to-order for your work, too. If you'd like to consider it, you might start by sending us information about your operation, or by writing for case histories we've filed from the lumber and pulp business. You also might enjoy our new sound film "Fingers of Steel."

Your materials handling problems may need *big* answers. If so, we'd like to help.

R.G. LeTourneau

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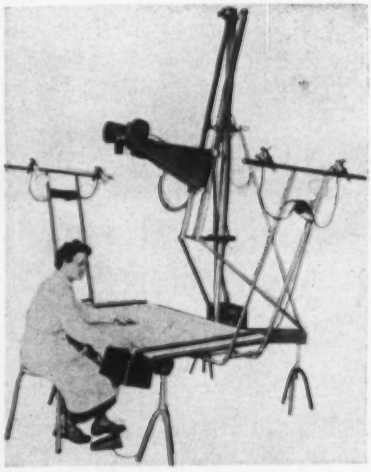
tom plate edges are flanged, flat bar frames are located 2 ft c-c, and heavily reinforced web type frames are spaced 8 ft c-c. By locking these floats together in a variety of arrangements, the contractor will have an adaptable piece of equipment to provide an economical solution to his floating problems, according to the manufacturer. Overall dimensions of the floats permit easy hauling within highway limitations. MANITOWOC SHIPBUILDING, INC., MANITOWOC, WIS.



Exposure Control Speeds Camera's Microfilming

Automatic exposure control with the new MT/O 35 mm microfilm planetary camera compensates for variation of background density and is claimed to give exact exposure time for quick high quality microfilming. With this camera, no light meters, voltage controls or other accessories are required.

Reduction range is 12X to 30X. The camera is operated by foot or hand control. A 40x60 in. copy table handles all drawings to 37½ by 52½ in. MICROLINE PRODUCTS GROUP, OZALID DIV., GENERAL ANILINE AND FILM CORP., 12 CORLISS LANE, JOHNSON CITY, N. Y.

Concrete Saw Features A 23% Power Increase

A concrete saw, known as the Model C-180, features a 23% increase in power over the previous model that it replaces.

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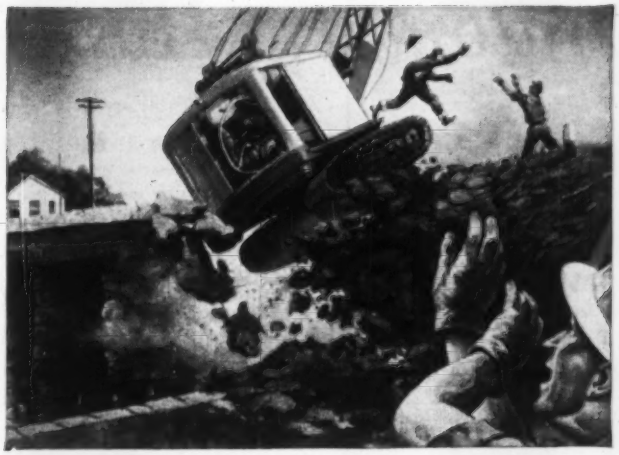

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- **with longer equipment life,**
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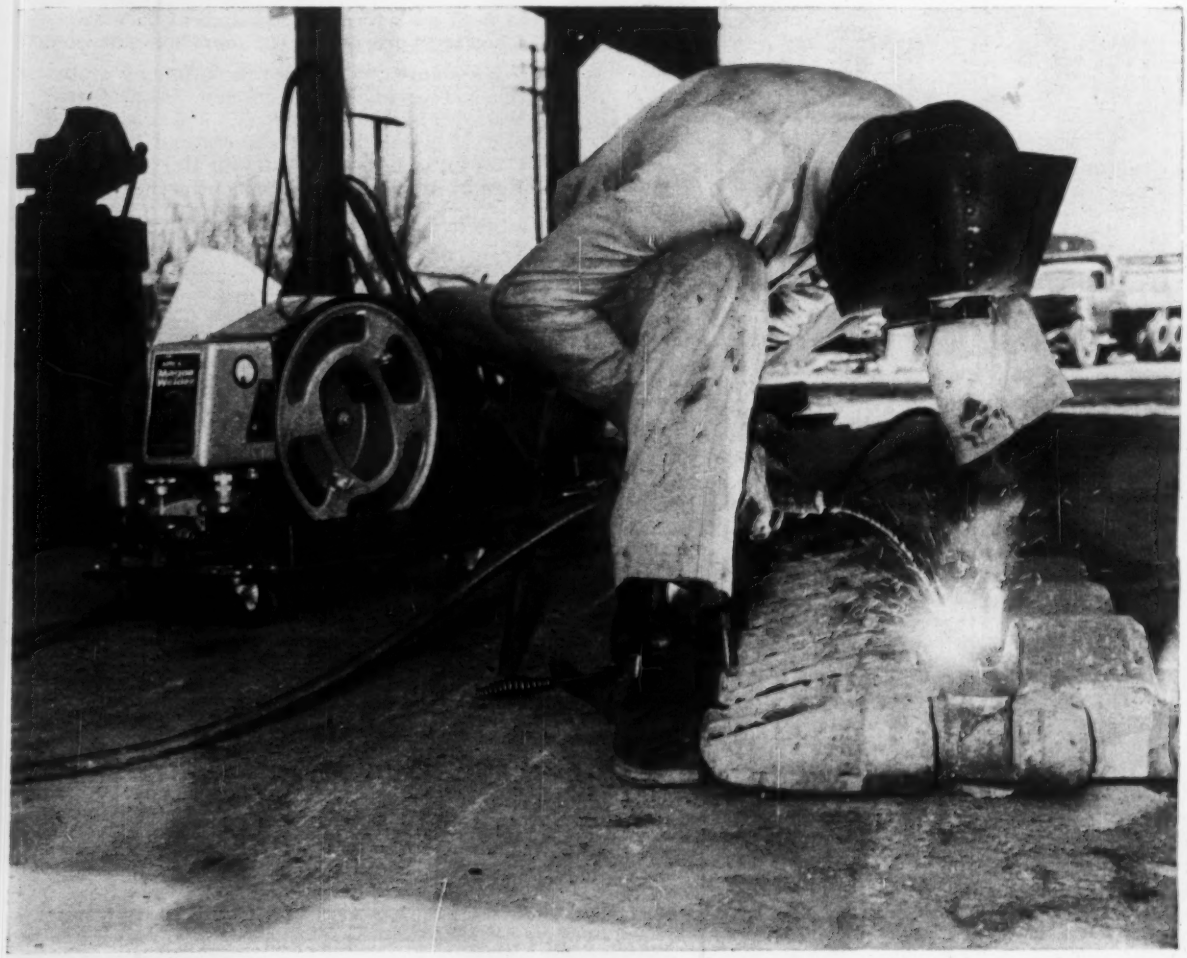
Everyone is always searching for *better, easier ways* to keep equipment in operation! Until the development of Stoody semi-automatic wires, maintenance hard-facing was limited to manual welding or fully automatic welding. Now, however, operators have a new tool which combines the advantages of *both* the manual and automatic processes with extreme flexibility of application. Hard-facing is usually applied directly without need for dismantling or positioning equipment. Speed of the process surpasses even automatic welding.

Weldor rebuilds shovel track pads with semi-automatic machine using Stoody Nickel Manganese wire to restore lost metal.



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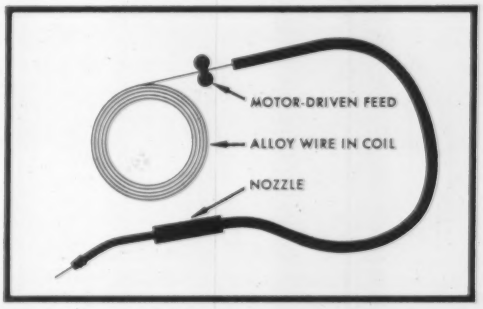
EXCELLENT WEAR RESISTANCE—Stoody semi-automatic hard-facing wires are equal or superior in wear resistance to well-known Stoody manual electrodes of similar analysis. Low penetration causes less dilution with the base metal, therefore deposits are higher in alloy content, improving over-all wear resistance.

WIDE RANGE OF WIRES in low alloy to high alloy types gives you the only complete selection on the market, provides the one "best" wire for each wear condition... your assurance of *maximum protection per dollar invested!*

ASK FOR A SEMI-AUTOMATIC DEMONSTRATION! Our field engineers are equipped to demonstrate this new time, cost and labor saver right on your job. Arrange a date with your Stoody dealer! (Check the "Yellow Pages" or write direct.)



HOW SEMI-AUTOMATIC HARD-FACING WORKS Stoody semi-automatic wires are fed through the machine by motor-driven rolls. The motor is automatically actuated as the arc is struck. The weldor merely directs the deposit; wire feed is automatic and continuous as long as the arc is maintained. Certain wires are best applied by submerged arc, using the semi-automatic machine with a light positioner for full automatic welding.

Rebuilding tamps with semi-automatic machine. Pipe section is driven over worn feet, filled with Stoody 121. Cost is one-third of ordinary replacements... service life several times more.

Bucket lips, teeth and sides are hard-faced with semi-automatic welder without positioning work. Stoody 121 is generally recommended for position welding, as on bucket sides.

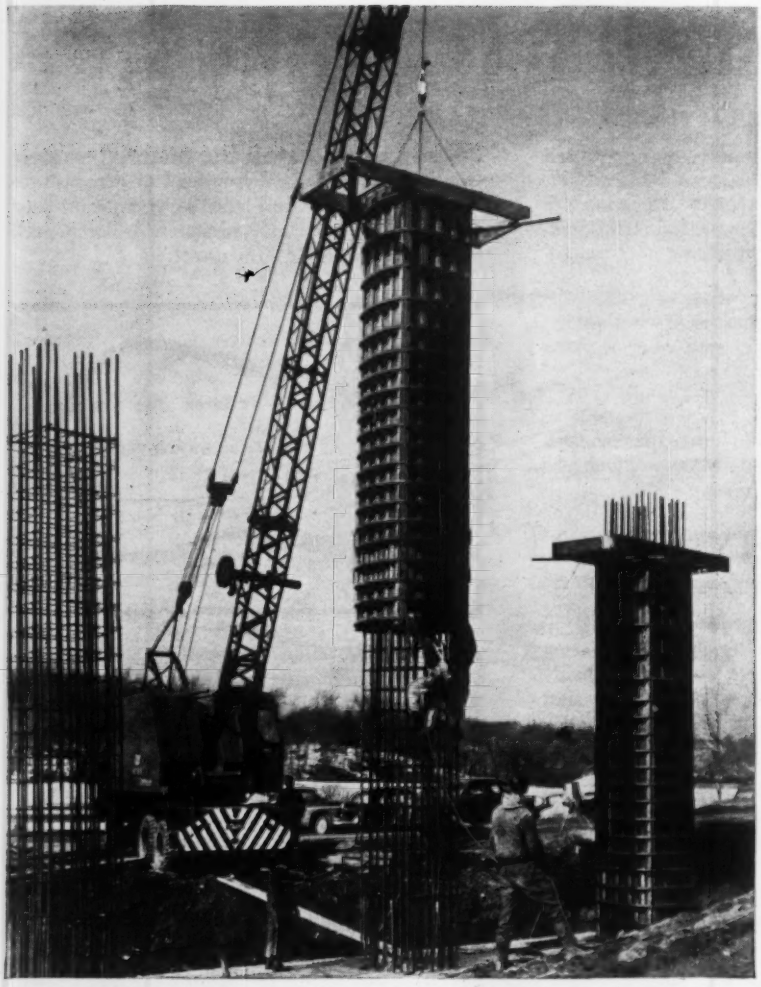
Impact breakers are readily hard-faced in position with the semi-automatic. Frequent applications are often necessary to maintain efficiency of crusher. Speed of application is important here.

Tooth from 5-yard bucket... repointer welded with Stoody Nickel Manganese and hard-faced with Stoody 121 by the semi-automatic process.

Carrying scraper blades, cutters and sides are most economically protected by use of the semi-automatic welder using Stoody 100 or Stoody 121.

STOODY COMPANY
11906 East Slauson Avenue
Whittier, California

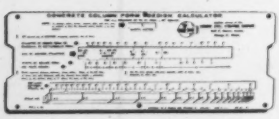
SEE OUR BOOTH NO. 617
AT THE WELDING SHOW
APRIL 15-17 1958
ST. LOUIS, MISSOURI



Signode way saves 1/3 of form tying costs

Contractors tying forms with steel strapping are saving as much as 33% in labor and material costs. Signode strapping eliminates form hardware... is easily cut to length from the coil... is tensioned and sealed with tools one man handles readily... is stripped and disposed of quickly when forms are removed ...produces clean work that practically eliminates finishing time. And it is useful for many bundling jobs on the construction site. The Signode man near you is ready to help you cut form tying costs on your next job. Call him today, or write Signode.

Concrete column calculator simplifies form design



Your guide to proven, economical designs for concrete column forms. Shows strap sizes and spacings to use on forms up to 65" diagonal or diameter... illustrates six tested truss designs. Offer limited to architects, contractors, engineers. Mailed promptly on receipt of $1.00.

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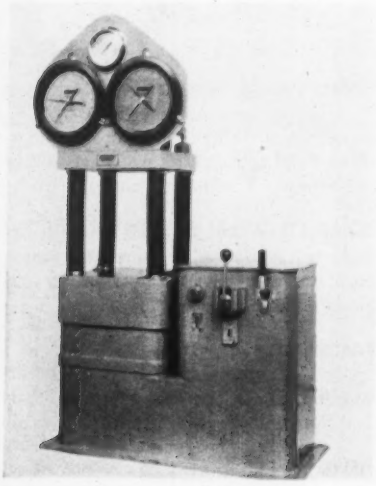

Concrete Test Machine Has 350,000 lb Capacity

Designed for testing concrete and concrete products in compression and flexure, the new Forney Model LT-600 machine has a 350,000 lb capacity.

The machine can be equipped with standard accessories for testing 2 x 2 in. to 6 x 12 in. cylinders or block up to 8 x 12 x 18 in. in compression, beams and lintels up to 8 x 8 x 48 in. in flexure, and bricks in compression and modulus of rupture.

The low pressure gage is calibrated in pounds from 0 to 60,000. The high pressure gage is calibrated 0 to 350,000 lb. Loading speed is variable over a wide range, and pressure is applied in an upward direction. FORNEY'S, INC., Box 310, NEW CASTLE, PA.

Cab-Forward Truck Adapts To Light and Heavy Hauls

A versatile cab-forward truck, adaptable to both light and heavy hauling in cities or over the road, will be in production within the next few weeks.

The new models, designated the N-Group, will be produced for use either as four or six wheel trucks or tractors, and will be available with either gasoline or diesel engines. The manufacturer states that this vehicle will be the first cab-forward type with set-back front axle capable of accommodating a diesel engine over 200 hp.

The 40-Series, for lighter hauling, registers a maximum gross vehicle weight of 28,000 lb, and a gross combination weight on tractors of 40,000 to 53,000 lb. The 60-Series, for heavier work, has a maximum gross vehicle weight of 30,000 lb, and a gross combination weight on tractors of 50,000 to 65,000 lb. MACK TRUCKS, INC., 1355 W. FRONT ST., PLAINFIELD, N. J.

Kodagraph Autopositive Paper strengthens line detail, drops out stains—turns old drawings into new ones.

Saved: $195 in Redrafting costs by making a Kodagraph Autopositive Paper intermediate

BEFORE you retrace another soiled or weak line drawing ask your print room or local blueprinter to figure the cost of making a Kodagraph Autopositive Paper intermediate.

The saving in dollars, even with the smallest drawing, is reason enough to end the retracing chore for good. The line detail on an Autopositive intermediate, unlike a pencil drawing's, won't smudge or smear when it's pulled from the files . . . will remain legible even after being used hundreds of times for reference or printmaking.

The smartest move, of course, is to make an Autopositive Paper intermediate of every drawing in your active files. Use these for all reference work and printmaking. This way you'll protect your valuable originals, and get top-quality prints time after time.

FREE: Write today for your copy of "New techniques . . . new savings with Kodagraph Reproduction Materials." Jam-packed with valuable tips on saving drafting time, protecting drawings, getting better prints.

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lower YOUR COST per foot drilled

"ORIENTED" DIAMOND CORING BIT

Available in four different matrices and three different grades of correctly-sized diamonds. EX, AX, BX and NX sizes carried in stock. Larger sizes and special designs furnished to meet any specifications or requirements.

"M" SERIES "ORIENTED" DIAMOND CORING BIT

For use with "M" SERIES Core Barrel, when good cores must be secured from soft or friable strata. Available in all four types of matrix and three different grades of diamonds. Also in a complete range of impregnated sizes. EX, AX, BX and NX sizes carried in stock.

"ORIENTED" DIAMOND "TAPER" TYPE NON-CORING BIT

The fastest cutting bit for drilling blast holes in very hard formations. All standard sizes.

The one sure way you can do this is to specify or order Sprague & Henwood "Oriented" Diamond Bits. "Oriented" to give you better performance; and "Oriented" for minimum diamond loss. Thousands have been used in Sprague & Henwood's contract diamond drilling department, and thousands more have been supplied to its many customers. Completed contracts have produced lower costs and customers' re-order. Write for new Catalog No. 320-1 which gives the complete "Oriented" story, and illustrates and describes Sprague & Henwood's Diamond Bit Line.

RESETTING SERVICE

Send in your bits that need resetting, giving full details of results obtained and conditions under which the bits were used. Prompt, accurate and dependable service assures you that they will be returned new and with the diamonds "Oriented". Generally, reset bits are on their way back to the customer within three working days. In many cases, suggestions for improvements in bit performance can be made after inspection of your bits, provided full details covering their use have been received.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.
S&H SINCE 1853

Branch offices: New York • Philadelphia • Pittsburgh • Atlanta
Buchans, Newfoundland • Grand Junction, Colorado

Publications

Tractors—A maintenance guide for operators is illustrated in full color and issued to supplement the more detailed maintenance instructions for Caterpillar's Traxcavator (Nos. 933,955 and 977). Copies of the Maintenance Guide are available in English, French, German, Spanish and Portuguese. Advertising Div., Caterpillar Tractor Co., Peoria, Ill.

Motor Grader—A four-page bulletin of the Galion Model 160 motor grader has been issued, describing and illustrating the new heavy-duty, constant mesh, six-speed transmission of the grader. Bulletin No. 421, Galion Iron Works & Mfg. Co., Galion, Ohio.

Brakes—A four-page bulletin describes the use of B. F. Goodrich Hi-Torque brakes for heavy-duty and off-highway construction vehicles. The brochure explains how the brakes are said to increase the service life of heavy equipment, permitting quick stopping and giving equipment operators greater safety and control. B. F. Goodrich Co., Akron, Ohio.

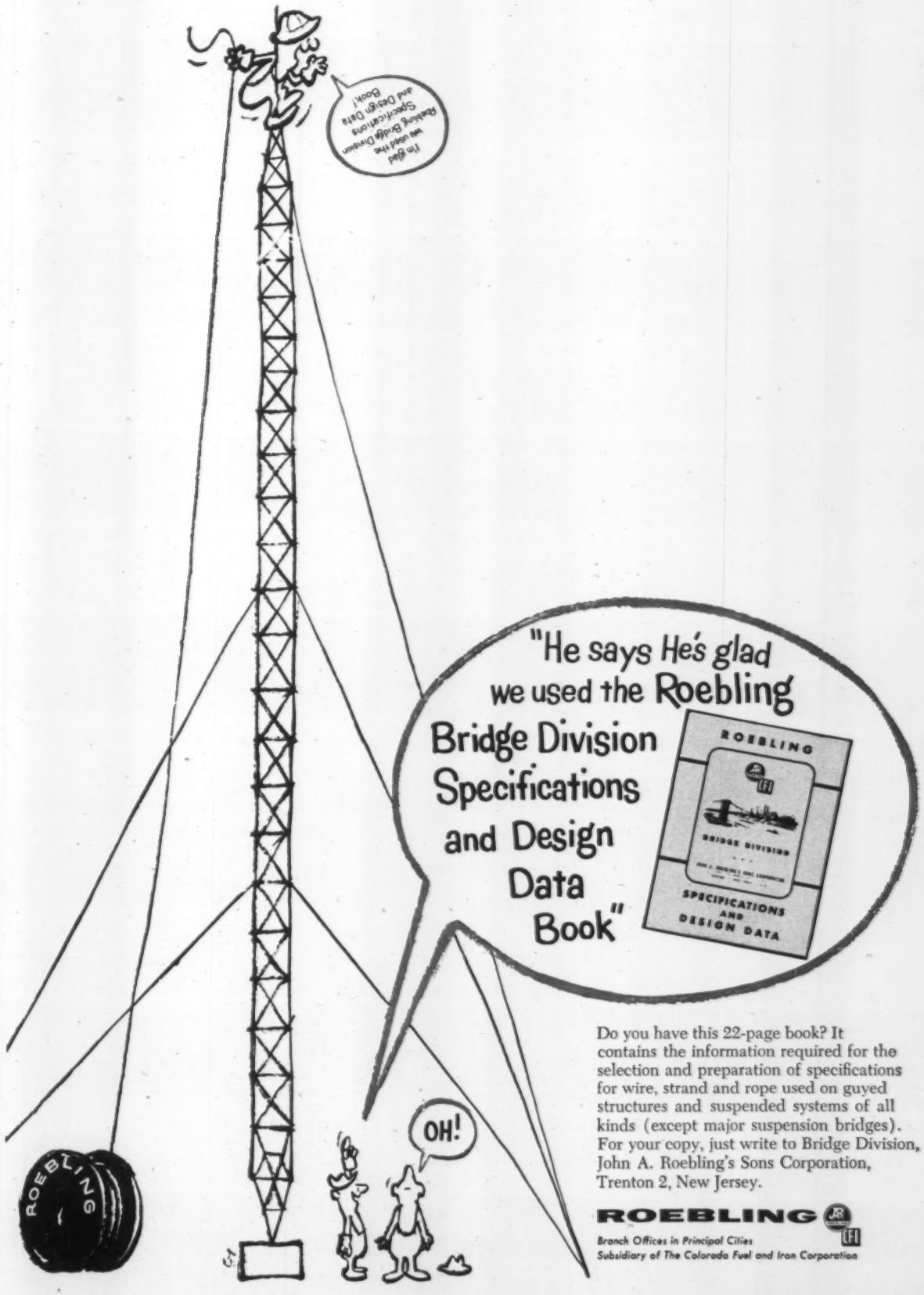
Mixing—A two-color, four-pager presents the Model 828 Stabilization Plant for low-cost mixing of stabilized road-base materials at high capacity. Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

Asphaltic content—Catalog BCT is a four-page illustrated brochure listing equipment for testing asphaltic content of bituminious concrete. Specifications and prices included. Will Corp., Box 1050, Rochester 3, N. Y.

Dryers—Batch ovens for rapid drying of aggregates, soils and other construction materials are illustrated and described in a four-page bulletin. Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.

Shovels—Descriptions and illustrations of a ⅜ cu yd digging bucket and a ½ cu yd rehandling bucket are presented in Bulletin A-265, which also contains shovel specifications. Schield Bantam Co., Waverly, Iowa.

Lumber mills—"Where to Buy" is a 40 page publication listing more than 200 mills in Oregon, Washington and northern California. It also contains information on key personnel, capacities and facilities of each member mill. West Coast Lumbermen's Association, 1410 S.W. Morrison St., Portland 5, Ore.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Do you have this 22-page book? It contains the information required for the selection and preparation of specifications for wire, strand and rope used on guyed structures and suspended systems of all kinds (except major suspension bridges). For your copy, just write to Bridge Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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Subsidiary of The Colorado Fuel and Iron Corporation

TEST VAN houses instruments for Army studies on blast effects. The unit is aimed at speeding research by the Army's Engineer Research and Development Laboratories.

BLAST INSTRUMENTS include photographic recording devices (left and center) and a tape recording instrument (right). Instrumentation was developed by Stanford Research Institute.

Truck Houses Blast Instruments

Scientists for the Corps of Engineers have a new tool to aid research on blast and explosive phenomena. It's a truck-trailer unit that crams extensive instrumentation into a small space.

The mobile facility was developed by Stanford Research Institute, Menlo Park, Calif., for the Engineer Research and Development Laboratories of the Corps of Engineers. ERDL has been carrying out an extensive series of tests on blasts. For example, in recent years a number of underground TNT shots have been set off at Dugway Proving Ground in Utah. By using varying amounts of explosives in different ground formations—clay, sandstone and granite—conclusions have been reached on rate of propogation of blast waves and intensity of shock at varying distances from the blast.

Three groups of equipment were designed or selected and installed in the van. The first group measures shock waves in fluids and solids, phenomena occurring close to the point of explosion, and effects characteristic of small explosions. It provides capacity for recording phenomena on a photograph film strip moving at 1,000 in. per second. Time-resolutions or intervals, as short as 10 millionths of a second within a total recorded period of 25 thousandths of a second can be obtained, providing an accuracy of 2% or better.

The second group records, also on a photographic film strip but one which moves at 100 in. per second, general blast data and underground explosive effects, plus detailed information on stress, strain, and vibration. With this equipment, intervals of one-thousandth of a second duration can be recorded.

The third group comprises magnetic-tape recording equipment, operating simultaneously with the other equipment, but providing an electrically reproducible version of the data obtained.

The equipment is housed in a 8x22 ft van-type body, which is air-conditioned. A darkroom with equipment for on-the-spot photographic development is included.

Bacteria Seen as Cause Of Acid Mine Wastes

Researchers at Ohio State University have found bacteria they believe may cause the formation of sulfuric acid that seeps from abandoned coal mines and poisons adjacent streams. Results of a nine-month study were reported at a recent acid mine drainage conference in Columbus, Ohio.

Chester I. Randles, an OSU bacteriologist, told of finding micro-organisms in all the acid discharges into the body of water studied, Raccoon Creek, which empties into the Ohio River at Gallipolis. This stream drains an area that includes 355 coal mines, mostly abandoned. Once teeming with fish, today Raccoon Creek can not even support aquatic life—much less supply drinking water for humans.

Professor Randles suggested that other bacteria could be used to counteract the effect of the harmful organisms, much as sewage plants do.

The OSU work, under the direction of Prof. Robert F. Baker, has been summarized in a 158 page report.

Wells to Check Unusual Conditions of Reservoir

An oil field drilling contractor has been retained by Seattle City Light to obtain additional information on groundwater conditions at the site of proposed 540,000 kw Boundary Dam on the Pend Oreille River.

Mining interests in the area are protesting that their mines would be flooded by seepage from the reservoir if the dam were constructed. Core drilling, to be carried out by Terminal Drilling & Production Co., Los Angeles, will prove that such fears are unfounded, City Light believes.

At least eight 6 in. cased wells up to 2,500 ft in depth will be drilled during the next three to four months, at an estimated cost of $135,000.

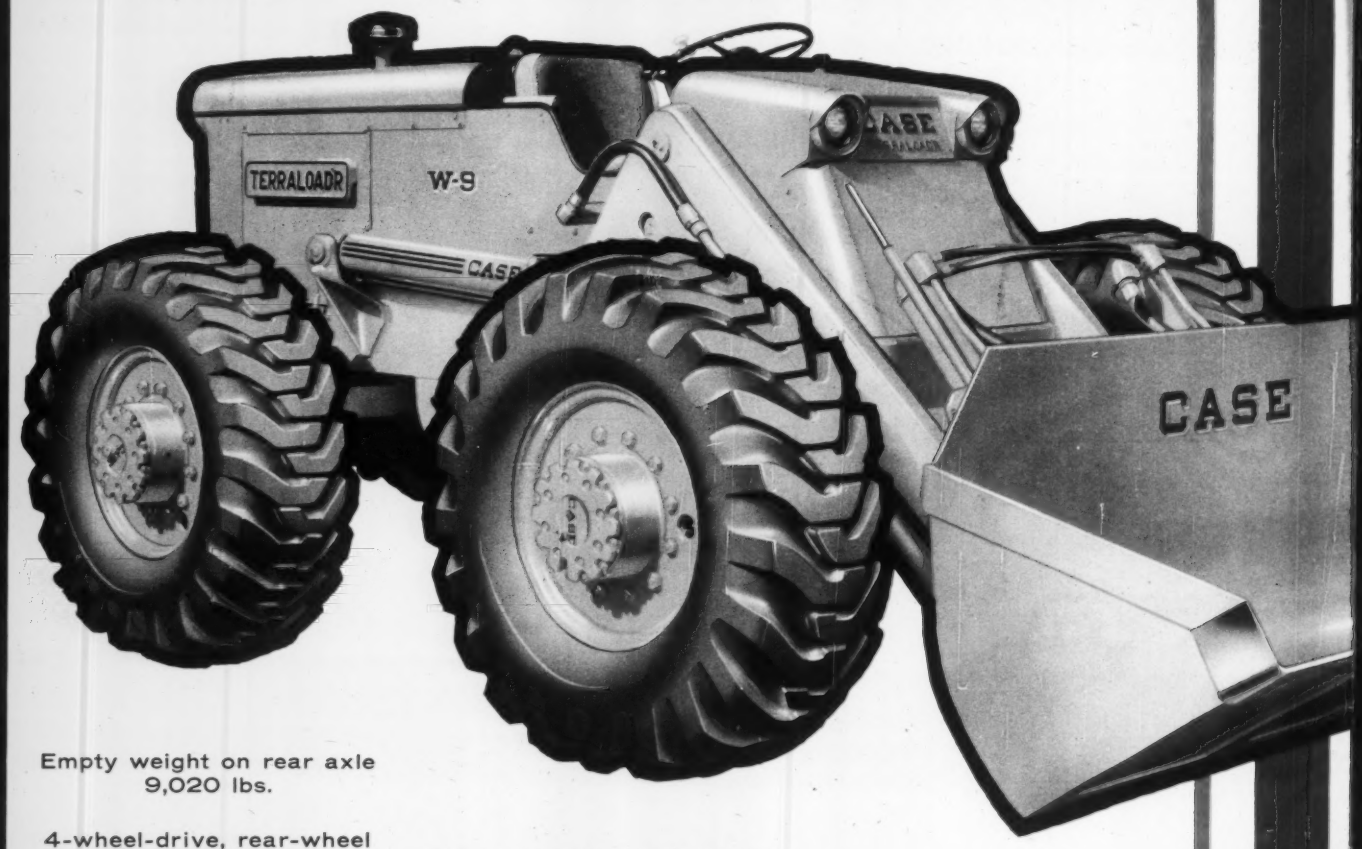
Boundary Dam, near the Canadian border, would be a concrete structure 385 ft high and 975 ft long.

Announcing the revolutionary

CASE® W-9 TERRALOAD'R

1⅜ to 2¾ cu. yd. capacity
Four-wheel-drive, rear-wheel steer

CASE 1st in quality for over 100 years



Empty weight on rear axle
9,020 lbs.

4-wheel-drive, rear-wheel
power-steer

Full power-shift in all speeds
plus forward and reverse

Empty weight on front axle
6,660 lbs.

Total weight—15,680 lbs.

11,000 lbs. break-out force

5,000 lbs. carrying capacity

Powerful high-torque Case gasoline or diesel engine, equipped with power-boosting torque-converter drive, gives the Case W-9 Terra-load'r up to *40,000 lbs.** of crowding power for fast digging in hard materials. Direct thrust design utilizes full power and prying action of machine for maximum digging efficiency. Operator always has clear view of bucket.

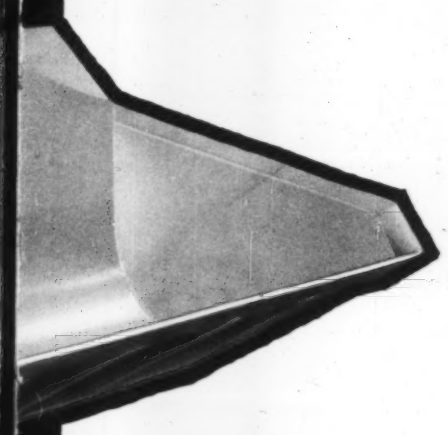
*Assuming adequate traction

40° bucket rollback, combined with properly balanced weight distribution, enables the Case W-9 to carry bigger payloads at higher speeds — with less spillage — and without the usual "bounce and forward-dip" experienced with conventional rubber-tired loaders. Full power steering on rear wheels makes unit extremely easy to turn and maneuver.

Short, rigid lift-arms, pivoted ahead of the operator, provide 62½" of forward reach for pitching loads into center of truck. This exclusive feature also gives operator unobstructed visibility on both sides . . . eliminates danger of catching operator's arm in lifting mechanism . . . makes it easy to get on or off machine any time, without climbing over boom arms.

NEW CASE® W-9 TERRALOAD'R

revolutionizes loader performance on rubber ...saves you up to $2000 in first cost!



Here, at last, is a big capacity *4-wheel drive, rear-wheel-steer* loader that gives you all the advanced performance features you've been wanting in this type of unit — at savings *up to $2000 in first cost.* With the new W-9 Terraload'r you get . . .

Better balance and stability — Improved weight distribution, with 37% more empty weight on rear wheels, provides better traction for tough digging, without "bucking", or raising rear wheels off ground. This, together with better lateral stability, enables you to dig, maneuver and dump heaping payloads faster, easier, more safely.

Improved operator safety — Operator has unobstructed visibility in all directions . . . can get on or off machine in a hurry. And all boom-lifting mechanisms are completely out of the way!

Power matched to the job — High-torque Case gasoline engine (or famous all-weather-starting Case diesel), with torque-converter drive, insures adequate power for all digging and loading operations — with *maximum* fuel economy, dependability and long life.

Constant-mesh power-shift transmission — Provides three forward and reverse speed ranges — from 0 to 21 MPH — automatically balanced to changing loads, with full power-shift on-the-go in all speed ranges, as well as forward and reverse. Two conveniently located levers — one for speed selection, one for forward and reverse — give instant, positive control without mechanical shifting.

One warranty, one service source — Complete machine — *including the engine* — is engineered, built and fully warranted by J. I. Case Company, and serviced by reliable Case Industrial Dealers everywhere. No costly delays on parts! No "split-responsibility" on service!

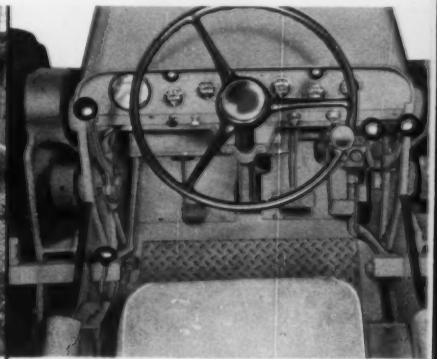
Investigate today — Call or write your nearest Case Industrial Dealer for full information, including details of new Case financing and LEASE plans to fit your needs, without tying up needed working capital.

3 Bucket Sizes

1⅜ cu. yd.—for tough digging
1¾ cu. yd.—for std. materials
2¾ cu. yd.—for light materials

Big 42.5 GPM hydraulic pump teams with husky double-acting lift and bucket-tilt cylinders to give the Case W-9 Terraload'r a terrific break-out force of 11,000 lbs. at ground level. Carrying capacity in travel position is 5,000 lbs. All-weather cab (shown in above illustration), together with heater and other deluxe accessories, are optional at extra cost.

Wide, flat-bottom Case bucket gets heaped loads fast . . . raises to full lift-height in 7½ seconds. Automatic sight-leveling gauge on right bucket tilt-cylinder tells bucket-angle at a glance, enables operator to adjust bucket to ground level position while lowering. Transmission is automatically disengaged by touching brake, for max. hydraulic power.



Operator rides in a comfortable air-controlled seat, fully adjustable fore and aft, with all controls within easy reach. Readable-at-a-glance instruments are color-coded for proper operating range. Two handy foot throttles — one on right side for normal operation and one on left — make it easy to "gun" engine with left foot, while right foot operates brakes.

You get better visibility ...more side stability with

NEW CASE® W-9

Note the clear view ahead from the operator's position in the Case W-9 Terraload'r. No dangerous "blind-spots" from massive yokes or bucket linkage. You also get much better side stability due to the W-9's *low center of gravity and wide wheel tread.* These exclusive features, together with shorter, more rigid lift arms — pivoted *ahead* of the operator's compartment — enable you to *maneuver bigger loads faster, easier* — without the usual "swing and sway" encountered with other 4-wheel-drive loaders.

Add the advantages of longer forward reach, plus *improved "fore and aft" stability,* and you'll quickly see why the new Case W-9 is already being acclaimed as the *safest, easiest-handling 4-wheel-drive loader in its capacity range.* Call your nearest Case Industrial Dealer today for the complete story, including details of new Case financing and LEASE plans, with easy monthly payments, tailored to fit your needs.

Investigate this new Case-built, Case-powered Terraload'r today

Long-term lease or purchase plans to fit your needs

Ask your nearest Case Industrial Dealer to show you how you can LEASE the new W-9 Terraload'r — as well as other Case® TerraTrac® industrial wheel and crawler units — *on easy monthly rental terms* — WITHOUT tying up needed capital. Your Case lease contract may also contain an *"option to purchase"* at any time, with all prior rental payments credited on purchase price. Investigate today!

Clip...mail for free catalog

J. I. CASE COMPANY, Racine, Wis., U.S.A.

☐ Send free catalog on new W-9 Terraload'r

☐ Send name of nearest Case Industrial Dealer

Name ..... Title.....

Employed by .....

Address .....

City ..... State.....

C-TL-138

CASE 1st in quality for over 100 years

Brief W-9 Specifications

LOADER

Bucket capacity (heaped)	1⅜, 1¾ and 2¾ cu. yds.
Break-out force	11,000 lbs.
Carrying capacity	5,000 lbs.
Rollback at carry	40°
Forward reach (at 7' dump)	62½"

TRACTOR

Gross engine HP (Gasoline)	69.5
Gross engine HP (Diesel)	65.7
Axles	Spiral bevel with planetary reduction in hub
Torque converter	Single Stage — 3.5 to 1 Stall ratio
Transmission	Full power-shift, 3 speeds forward and reverse
Max. lbs. push or pull (Fwd. or reverse)	
1st	40,000
2nd	11,500
3rd	4,970

Assuming adequate traction, the torque converter automatically adjusts drawbar pull or push to the above loads within following speed ranges:

	Forward	Reverse
1st	0 to 2.4	0 to 2.4
2nd	0 to 6.5	0 to 6.5
3rd	0 to 21.0	0 to 21.0

Tires (4) Standard	14.00 x 24 — 8-Ply tubeless
Overall length at carry	18'3"
Overall width (over hub)	93"
Approx. weight	15,680 lbs.

Fred W. Heldenfels, Jr., new AGC president says . . .

. . . Recession Can Be a Challenge

Fred W. Heldenfels, Jr., new president of the Associated General Contractors, says that the construction industry now has a golden opportunity to take the spotlight in the economic eyes of the nation.

Contractor Heldenfels, interviewed by ENR before last week's AGC meeting in Dallas (see p. 21), believes the steady climb of construction will continue despite the sag in the general economy and recalls that in the last minor business recession in the nation, in 1949 and 1950, construction was one of the major industries that continued to climb steadily.

• **Equipment situation**—Asked to comment on the "hard sell" in equipment sales, AGC's new president said:

"In the first place, the equipment manufacturers overproduced in anticipation that the highway program would get off to a fast start. As the program gets under way their problem will ease. But, now they are putting pressure on dealers to move equipment. Some of the dealers are crying, not only about not selling, but that contractors have had to be offered easier terms.

"The over supply of equipment is like an over supply of anything else, it put the contractor in a buyer's market—for the first time since World War II. It also gives the contractors a break as far as better terms for trade-ins, and financing for equipment are concerned. Not only will the contractor have better terms, but in all probability he will be able to get the equipment he needs on current delivery."

• **Competition situation**—Has contractor competition increased?

"The competition has increased generally throughout the nation in all sorts of construction. Statistics show constructors and subcontractors have doubled in the last five years. That in itself means more competition. Actually, more new contractors are entering the field than there is work.

"It is a fairly easy step for anyone with a knowledge of construction work to step out and start bidding as a contractor or a subcontractor. It is interesting to note that business failures have also increased.

"A lot of men who are good artisans jump into the business without the necessary knowledge for accounting, estimating and management. And these are fundamental requirements in becoming a successful contractor."

ENR asked Mr. Heldenfels whether many builders are switching over to highway work.

"More builders seem to have been switching over to highway work in anticipation of the large volume of work to be generated by the highway program, however, there has always been an overlapping to a certain extent."

The Heldenfels firm doesn't anticipate extending operations, mainly because of the volume of work available in the State of Texas.

"Fortunately," Fred Heldenfels says, "Texas is one of the top states in the highway program and we hope to keep busy close to home."

• **Payments situation**—What is experience on receiving payments?

"We haven't experienced any trouble in receiving payments for work. Where trouble exists, it is on primarily a local level; in Texas we generally have no trouble in getting prompt payment."

(A recent survey by ENR showed Texas to be one of the few states prompt in its payments on highway contracts—ENR Oct. 17, 1957, p. 293).

Mr. Heldenfels said he can't give first hand experience on a prevalent contractor complaint that varying state equipment specifications limit flexibility on use of equipment.

"This has been a problem in the past and still is a problem for the highway contractor who has jobs in several states, in that his equipment may not be qualified for use or adaptable under the laws of all of the states," he says.

"An AGC-AASHO joint committee has done a lot towards solving this problem in the past and I assume will continue to work toward a solution of standardization for adjoining states."

Next ENR asked: What can contractors do to keep prices down?

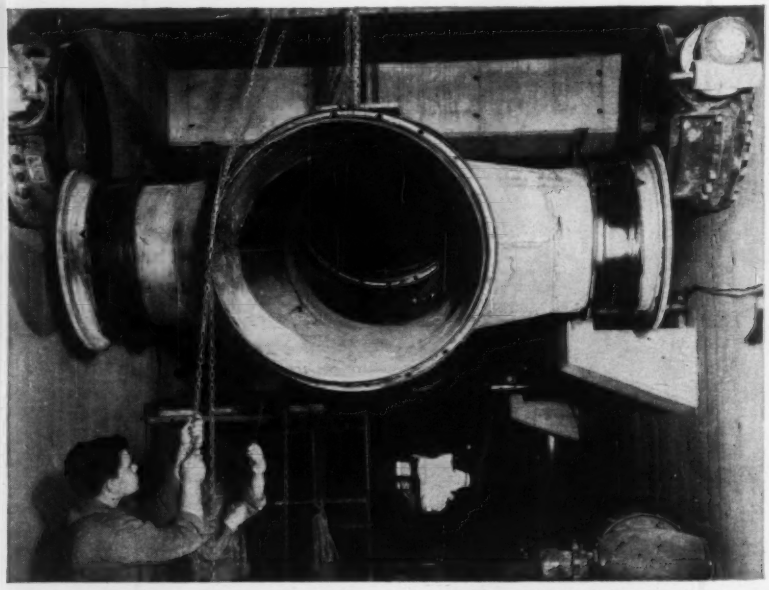
"I think that the contractor has done an outstanding job of keeping prices down in the face of rising labor, equipment and material costs. This can be partly accounted for by the use of larger and more efficient equipment and equipment available for specified operations.

"The contractor has been able to increase production per unit and keep the unit price down. Also, knowhow, ingenuity and planning have made it possible for the contractor to keep his costs down.

"Great savings and improvements in

Easy does it

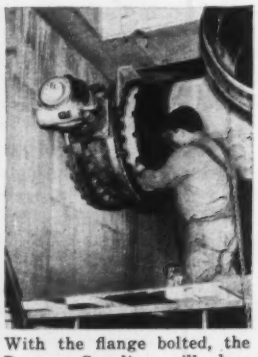
...the Dresser way



This is a cross on the main intake line at the new Clague Road Filtration Plant, Cleveland, Ohio. Designed by Havens and Emerson of Cleveland, the plant will have a normal flow of 50-million gpd. Hunkin-Conkey Construction Company is the contractor.

You don't need much leeway...the Dresser way

Not only was it the *easy* way, Dresser Couplings were actually the *only* practical way to install this steel cross on a filtration plant's main intake line. Note how little leeway exists between the valves and the pipe flanges. Bolting up would be impossible if the bolt holes were just a fraction out of line, but the Dresser method gives you the necessary "play". Settling concrete could change the valve centers, but the non-rigid Dresser Couplings will take deviation and remain bottle-tight . . . permanently. When you join pipe the easy way, it's the least expensive way . . . with Dresser Couplings.



With the flange bolted, the Dresser Coupling will close the gap and will absorb any expansion—contraction.

Bradford, Pennsylvania
Chicago
Houston
New York
Philadelphia
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construction work have been achieved through the work of the AGC and various government agencies. The AGC has taken the leadership in getting improved forms of contract specifications and methods throughout the years.

"They have also done a tremendous job in the field of accident prevention, savings being accrued in lives and injuries as well as reduced cost of insurance."

• **Firm's history**—Heldenfels Brothers was founded in 1909 as a lumber company by F. W. Heldenfels, Sr., and his brother C. A. Heldenfels. In 1922, F. W. Heldenfels became sole owner and the firm was operated that way until 1937 when his three sons—including Fred, Jr.—joined him in owning and managing the expanding operations.

The firm first got into the construction business in 1917 by building wooden freighters for the government. After World War I, they took the shipyard as part of the payment for the ships.

To utilize the yard, they went into the shell business. Shell was the material used on the early coastal roads and is still used as base material and aggregate in hot-mix.

From the shell business, the firm branched out into other phases of the construction business in the 1920s. Operations include highway building and other heavy construction, municipal improvements, shell dredging and marine service.

Fred Heldenfels, Jr., is head of the firm's highway building and heavy construction division and his brothers, J. R. Heldenfels and H. C. Heldenfels manage other aspects of the firm's operation.

The new AGC president has held two terms as president of the Texas Highway Branch of AGC, one as chairman of the Texas AGC Executive Council.

Nationally, he served as chairman of the Highway Contractors Division of the AGC, and as co-chairman of the joint committee of AGC and AASHO (The American Association of State Highway Officials).

• **Father of engineers**—Fred Heldenfels has two sons. One son is a field engineer in the firm while the other son is studying civil engineering at Texas A&M. The firm employs seven engineering graduates: its chief engineer, three men in estimating and three in planning.

Heldenfels Brothers, which operates primarily in south Texas, attracted national attention by building one of the

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If you're gunning for more business from new construction, Dodge Reports can help improve your aim. They point out your *live* prospects . . . put an end to the hit-or-miss method of finding business. If you would like to see how Dodge Reports can build your business . . . help your profits mount, just read this coupon, and mail it today!

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Question: Without the aid of a ruler, can you tell which of the bottom two diagonals is a continuation of the top one? See answer below.

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first major soil cement projects—a 43 mile soil cement highway in south Texas in 1939-1940.

Present work load is about $7 million, and includes two contracts for a total of $2.6 million for construction of interchanges to a high bridge being built over the entrance of the port at Corpus Christi. They also have a $1.5 million job building an interchange for a new bridge over the Nueces River at Calallen, and have just completed work on port facilities at Port Mansfield.

Executive Changes

George Bryant is elected chairman of Austin Co.

George A. Bryant has been elected chairman and chief executive officer of the Austin Co., Cleveland engineering firm. He has been general manager of the company since 1930 and president since 1940. The new president is Allan S. Austin, who has been promoted from vice president for sales. He retains responsibility for sales in his new post.

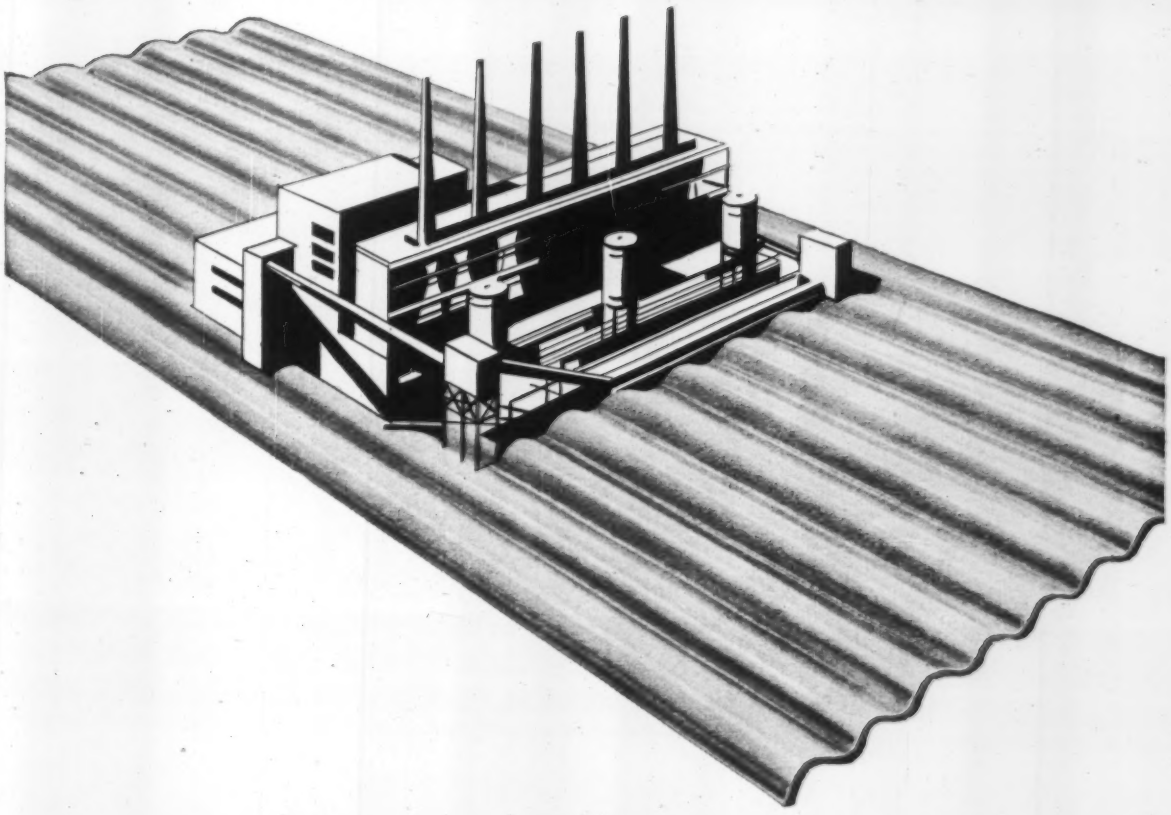
At the same time, Harold A. Hallstein, currently executive vice president, was elected vice-chairman, and Harold A. Anderson was appointed his successor as executive vice president.

Mr. Bryant started with the Austin firm in 1913 as a field engineer. He became general sales manager in 1918, and in 1930, after negotiating a $60 million contract to build a Russian industrial city, was appointed general manager. He took over the presidency after the death of Wilbert J. Austin.

Allen S. Austin joined the firm in 1928, a year after graduating from the Scientific School of Yale University with a B.S. in building construction. He has since had field and sales experience in the U. S. and abroad, becoming manager of sales research in 1946. In 1953 he was elected vice president and general sales manager.

It was as a tool boy that Harold A. Hallstein joined the Austin firm in 1911. He rose through the accounting department and was general auditor from 1926 to 1942. He was named vice president in 1934, a director in 1937 and executive vice president in 1947.

Following his graduation from Tufts College with a degree in civil engineering, Harold A. Anderson joined the firm in 1928 as a field engineer. After 10 years in construction, design and estimating work, he became district estimator in Chicago in 1939. He was made eastern district manager in 1944, a vice president in 1946, and a director a year later. In 1953 he was named assistant general manager.



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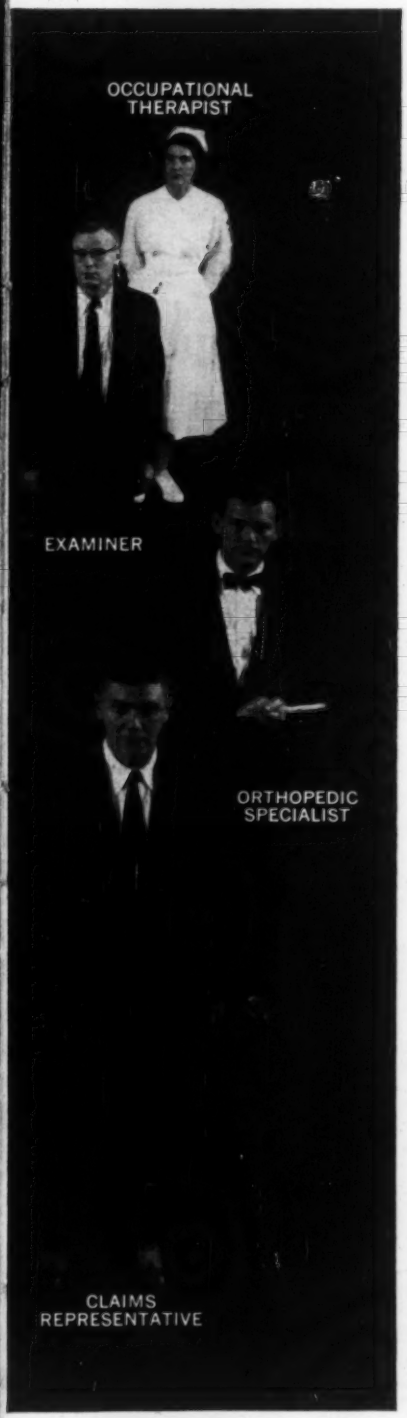

Insurance team saves worker's life

MAN LOSES LEG — LIBERTY MUTUAL'S "UMBRELLA OF CARE" GETS HIM BACK TO WORK

Last year, Henry W., employed by a policyholder of Liberty Mutual, had a crippling accident at work in which he lost one leg.

Twenty different professional and technical people were on the team needed to carry out his medical and rehabilitation program. These included physicians, surgeons, nurses and rehabilitation specialists, of whom 14 were on Liberty's payroll. Their work led to Henry's fine recovery. He is back on the job, adjusted to his disability and now earns more than he did before.

Liberty's method is to spread an "umbrella of care" over the injured worker. This Liberty teamwork not only benefits your employee but also reduces the chance of prolonged disability and increased cost of compensation insurance.

The Henry W. story shows the kind of protection you get when you insure with Liberty Mutual, world's largest writer of compensation insurance. Competent medical personnel work to keep losses down. In addition, Liberty assigns trained engineers to work with you — to keep men from getting hurt. Liberty also provides the best of claims service in your area to follow through on all accidents and claims.

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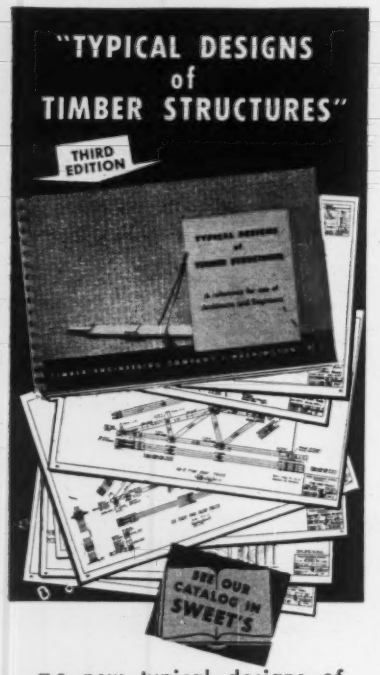

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ENR-582

Iowa Prices on Welded Aluminum Bridge

Other bridges in same letting use structural steel, prestressed and post-tensioned concrete beams

A 220-ft-long, four-span aluminum welded bridge, with a 30 ft roadway, was the feature of the bidding for six bridges and culverts for the Iowa State Highway Commission. The low bid of $1.00 a lb for 74,400 lb of structural aluminum, turned the tide in favor of Jensen Construction Co., United Contractors, Des Moines, Iowa, for this $124,680 contract, an average of $567 a lin ft. This was only 0.4% above the estimate of Ned L. Ashton, consulting engineer, Iowa City, designer of the bridge.

Two continuous welded girders have a span of 41.25 ft each, and the other two, 68.75 ft each. The two outside girders have 34x0.5 in. webs and flange plates ranging from 12x0.75 in. to 16x1.25 in. The two inside girders have 36x0.5 in. web plates and flanges ranging from 12x0.75 in. to 18x1.25 in. Piers and abutments will rest on piles. For more design details see p. 30.

The bridge will carry Clive Road in Des Moines over a new four lane divided highway.

Minimum wages on these jobs will include: Cement masons, $2.10; structural ironworkers, $1.75; painters, $2.20; welders, $2.00; pile drivers, $1.85; truck drivers, $1.60; bulldozer operators, 80 HP or less, $2.30; common laborers, $1.50; form builders, bridges and culverts, $2.20.

For purposes of comparison, unit prices are also shown for three of the other bridges, which will use structural steel and prestressed, or post-tensioned prestressed, concrete beams.

The bidding on the bridges went like this:

Bridge I—Welded Aluminum

1C	Jensen Construction Co., United Contractors, Des Moines, Iowa	$124,683
2	Arthur H. Newmann & Bros., Inc., Des Moines	129,060
6	Hobe Engr. Co., Sioux City, Iowa	167,282
EE	Ned L. Ashton, Iowa City, Iowa	124,200

Bids: 12-10-57 Items	Unit	Quantity	Unit Prices 1C	2
Concrete masonry	cy	417.8	$64.00	$50.80
Steel, reinforcing	lb	94,258	0.11	0.119
masonry plates	lb	3,730	0.24	0.25
Aluminum, structural	lb	74,400	1.00	1.14
handrail	lb	427.3	6.50	7.15
Piling, creo timber, 28 at 40'	lf	1,120	2.50	2.20
steel bearing f	lf	994	3.50	3.55
dr	lf	994	0.75	1.21
Excavation, Class 20	cy	354	7.00	1.75

Commence: 12-23-57 Complete: 7-5-58

Bridge II, Steel, with Prestressed Concrete Beams

1C	Hobe Engr. Co., Sioux City, Iowa	$74,288
2	A. Olson Constr. Co., Waterloo, Iowa	76,466
8	Jensen Constr. Co., United Contr., Des Moines	83,358

Bids: 12-10-57 Items	Unit	Quantity	Unit Prices 1C	2
Conc masonry	cy	491.5	$52.00	$51.75
Steel, reinforcing	lb	74,577	0.10	0.12
structural	lb	15,661	0.30	0.30
Conc beams, prestressed, 75'	ea	14	1,150	1,120
48' 8"	ea	14	660.00	715.00
Creo timber piling, 32 at 40' & 75 at 35'	lf	4,010	2.42	2.50
posts	ea	14	9.00	10.00
Steel beam wing rail, formed	lf	125	3.50	4.50
Excavation, Class 20	cy	323	3.00	3.00

Commence: 12-23-57 Complete: 8-9-58

Bridge III—Steel, with Prestressed Concrete Beams

1C	A. Olson Constr. Co., Waterloo, Iowa	$168,972
2	Hobe Constr. Co., Sioux City, Iowa	170,953
8	Christensen Bros., Cherokee, Iowa	185,468

Bids: 12-10-57 Items	Unit	Quantity	Unit Prices 1C	2
Concrete masonry	cy	1,312.1	$48.00	$47.50
Steel, reinforcing	lb	145,333	0.12	0.11
structural	lb	31,404	0.30	0.25
Conc beams, prestressed, 42' 6"	ea	7	585.00	550.00
67' 6"	ea	42	1,020	936.00
Creo piling, 16 at 35' & 16 at 45'	lf	1,280	2.50	2.50
Steel bearing piling f	lf	3,990	4.00	4.00
dr	lf	3,990	0.50	1.00
beam rail, formed	lf	125	4.50	3.50
Creosoted posts	ea	14	10.00	9.00
Excavation, Class 20	cy	750	3.00	0.90
21	cy	558	13.00	30.00
24	cy	556	1.50	0.90

Commence: 12-23-57 Complete: 8-9-58

Bids were taken on two designs for the fourth bridge. Included in the first of these designs, on which the contract was awarded, were 84 post-tensioned, prestressed concrete beams, replaced by steel in the second design.

Bidding on these two designs went:

Bridge IV—Steel, with Post-Tensioned, Prestressed Concrete Beams

1C	Jensen Constr. Co., United Contractors, Des Moines, Iowa	$549,869
2	Iowa Bridge Co., Des Moines, Iowa	606,299

Bids: 12-10-57 Items	Unit	Quantity	Unit Prices 1C	2
Concrete masonry	cy	3,509.4	$50.00	$56.00
Steel, reinforcing	lb	406,806	0.115	0.12
structural	lb	31,295	0.22	0.50
Conc beams, post-tensioned, prestressed, 101' 6"	ea	84	2,500	2,300
Steel bearing piling f	lf	15,470	3.30	4.25
dr	lf	15,470	0.75	0.75
Aluminum handrail	lf	2,818	5.60	11.00
Excavation, Class 20	cy	985	4.00	2.00
21	cy	2,985	9.50	14.00

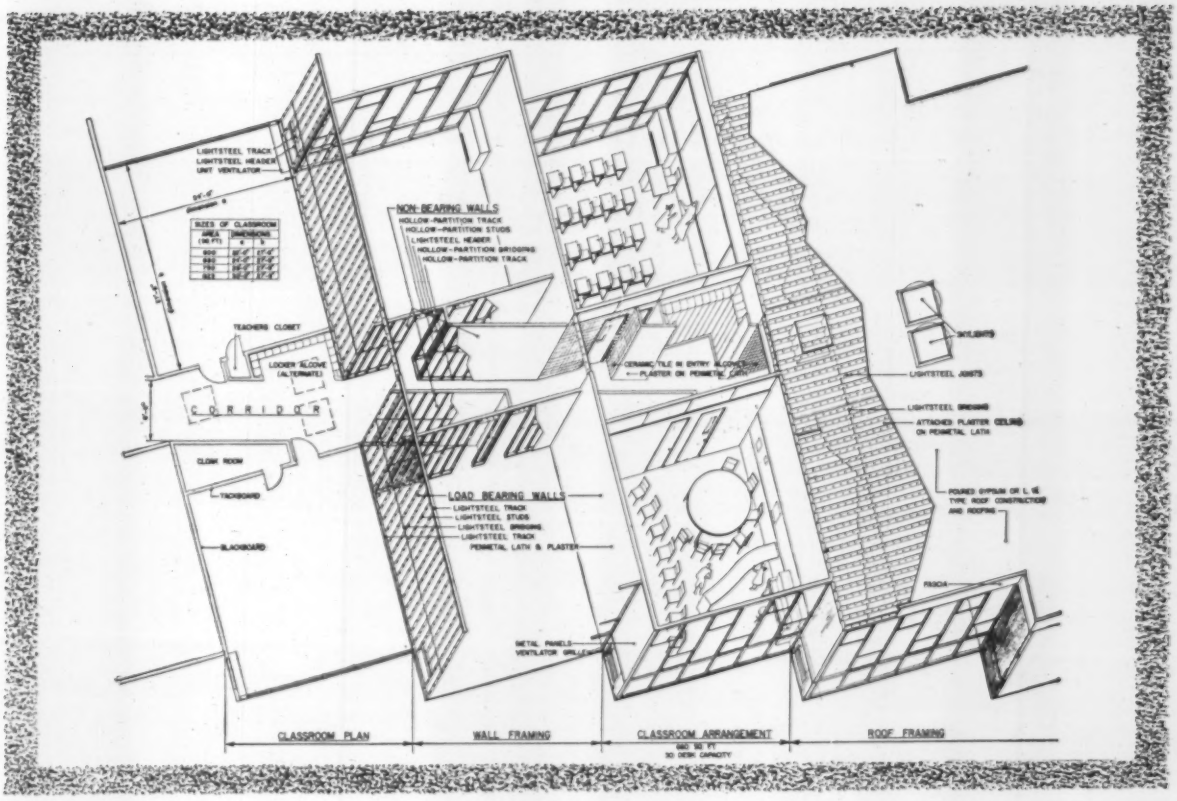
Commence 12-23-57 Complete: 8-9-58

Bridge IV-A—Steel

1	Hobe Constr. Co., Sioux City, Iowa	$649,031
2	Iowa Bridge Co., Des Moines, Iowa	654,055
5	Arthur H Newmann & Bros., Inc., Des Moines.	741,455

Bids: 12-10-57 Items	Unit	Quantity	Unit Prices 1C	2
Conc masonry	cy	2,763.8	$48.55	$50.00
Steel, reinforcing	lb	427,840	0.11	0.12
structural	lb	2,179,640	0.167	0.155
Aluminum handrail	lf	2,900	6.00	11.00
Steel bearing piling f	lf	13,688	3.50	4.25
dr	lf	13,688	1.00	0.75
Excavation, Class 20	cy	720	1.00	2.00
21	cy	1,660	14.50	15.00

Commence: 12-23-57 Complete: 8-9-58



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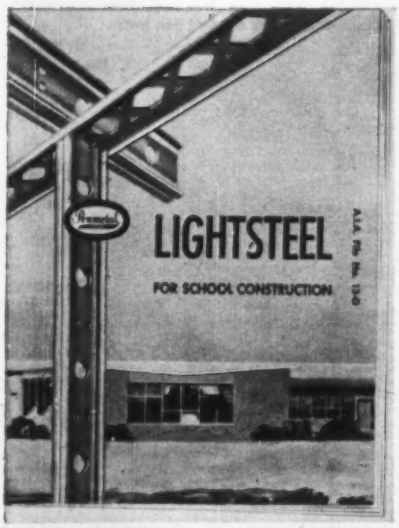

Write for new folder SS-18 which includes plans illustrating the versatility of LIGHTSTEEL for school construction. Describes three actual cases where architects used LIGHTSTEEL to solve individual problems. Details the various components of the LIGHTSTEEL system.

Also send for catalog SS-22 which gives complete loading tables and physical and structural properties of LIGHTSTEEL structural sections.

The plan, though hypothetical, embodies a method for "ideal" school construction within practical considerations—through the use of Penmetal LIGHTSTEEL.

This low-cost framing system, with its full range of lightweight components (refer to plan), combines high quality with economy of construction. LIGHTSTEEL imposes no design restrictions. It is readily available, easy to erect, and firesafe. Equipped with these advantages, the architect is free to provide a means for later expansion which does not drain too heavily on tomorrow's funds. Similarly, designs featuring low annual maintenance can be achieved.

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- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan 30; Next, Feb. 27.
- Wage Rates, Building Board, Lath, Insulation: Last, Jan. 30; Next, Feb. 27.
- Cement Aggregates, Ready-mixed Concrete Asphalt: Last, Feb 6, Next, Mar. 6.
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	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) 3/8"	3/4"
Atlanta †‡	$73.00	$78.00	$76.00	$79.00	$81.00	$86.00	$136.00	.....	.....	$121.00	$156.00	$22.32	$27.24
Baltimore *	95.00	100.00	100.00	100.00	100.00	105.00	114.00	.....	.....	170.00	185.00	25.92	31.68
	100.00g	*105.00g*	*125.00g*	*125.00g*	*125.00g*	*125.00g*	*133.00g*	*$150.00*	*$144.00*				
Birmingham †	80.00	82.00	75.00	82.00	85.00	90.00	105.00	.....	.....	115.00	160.00	21.78	26.58
	70.50	*70.50*	*67.00*	*70.00*	*70.00*	*85.00*	*73.50*	*70.50*	*70.50*	.....	.....		
Boston ‡	90.00f	90.00f	96.00f	96.00f	96.00f	104.00a	.....	.....	.....	.....	.....	25.92	31.68
	90.00k	*90.00k*	*106.00*	*106.00*	*106.00*	*109.00*	*120.00*	*120.00*	*125.00*	.....	.....		
Chicago **	92.00	95.00	89.00	103.00	111.00	112.00	107.00	.....	.....	135.00	135.00	22.45	27.37
	99.00	*99.00*	*112.00*	*110.00*	*110.00*	*111.00*	*119.00*	*119.00*	*119.00*	.....	.....		
Cincinnati *	93.00	94.25	86.50	90.50	95.00	102.75	116.00	.....	.....	129.50	127.80	25.00	30.48
	90.25	*91.25*	*95.50*	*97.50*	*98.25*	*109.00*	*121.00*	*121.00*	*121.00*	.....	.....		
Cleveland **	90.00	93.00	90.00	97.00	97.00	101.00	.....	.....	.....	.....	.....	25.37	30.93
	.....	.....	*96.00*	*96.50*	*96.50*	*98.50*	*115.00*	*115.00*	*115.00*	.....	.....		
Dallas k‡	70.00	70.00	65.00	65.00	65.00	70.00	140.00	.....	.....	136.00	136.00	18.72	22.80
Denver *	*Not in stock*		*122.50*	*122.50*	*122.50*	*127.00*	*136.00*	*148.80*	*153.80*	.....	.....	13.92	16.98
Detroit ‡	116.80	119.00	115.00	117.00	122.00	122.00	.....	.....	.....	130.00	.....	25.00	30.48
	125.00	*125.00*	*127.00*	*132.50*	*130.00*	*135.00*	*185.00*	*195.00*	*195.00*	.....	.....		
Kansas City ‡	120.00	120.00	120.00	120.00	125.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	120.00	*120.00*	*120.00*	*120.00*	*125.00*	*125.00*	*150.00*	*225.00*	*225.00*	.....	.....		
Los Angeles ‡	*90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*119.00*	*130.00*	*130.00*	.....	.....	16.61ab	20.25ab
Minneapolis #	*135.00m*	*135.00m*	*140.00*	*140.00*	*140.00*	*140.00*	*188.00*	*188.00*	*188.00*	.....	.....	19.89	24.25
Montreal ab	90.00	98.00	90.00	91.00	108.00	125.00	.....	.....	.....	122.00	122.00	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*170.00*	*170.00*	*170.00*	.....	.....		
New Orleans †	87.00	87.00	94.50	91.00	90.00	97.00	121.80	.....	.....	151.00	151.00	18.72	22.80
†	*105.00*	*105.00*	*99.50*	*115.00*	*115.00*	*115.00*	*127.50*	*127.80*	*147.80*	.....	.....		
New York ‡	107.00	108.00	113.00	115.00	115.00	120.00	.....	.....	.....	240.00	250.00	25.92	31.60
	.....	.....	*117.00*	*118.00*	*118.00*	*119.00*	*162.00*	*162.00*	*162.00*	.....	.....		
Philadelphia ‡		Range from 100/120				105/125	105/125	.....	.....	214/224	214/224	28.60	32.00
		Range from 110/140				*115/145*	*125/150*	*158.00*	*158.00*	.....	.....		
Pittsburgh 2	120.00	120.00	125.00	120.00	125.00	130.00	145.00	.....	.....	148.00	185.00	25.92	31.60
	130.00	*130.00*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*	.....	.....		
St. Louis #	115.00	117.00	125.00d	125.00d	125.00e	130.00e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*133.00*	*133.00e*	*133.00e*	*137.00e*	*191.00a*	*191.00*	*191.00*	.....	.....		
San Francisco ‡	*69.00*	*69.00*	*76.00*	*76.00*	*76.00*	*76.00*	*96.00*	*109.00*	*109.00*	.....	.....	13.22	14.91a
Seattle ‡	*67.00*	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*72.00*	*85.00*	*85.00*	.....	.....	.....	.....
Toronto a	92.50	93.50	90.00	90.00	90.00	90.00	.....	.....	.....	92.00	.....	.....	.....
	115.00	*115.00*	*117.00*	*120.00*	*125.00*	*126.00*	*142.00*	*155.00*	*145.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. sad., truckload lots, 5/6 Mfttbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. °a Spruce. °b Tax exempt. °c 5M lots. °d 8, 10, & 12 ft. lengths. °e 8 to 16 ft. lengths. °f Hemlock °g No. 1 common. °j 8 ft. lengths. °k No. 3 common. °l Incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $8.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures. °m Up to 16"

PLYWOOD (Ptyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, interior, moisture resistant, 3/8", $146.00; 1/2", $166.00. Exterior, waterproof, 3/8" $150.00; 1/2", $170.00. For other centers add rail freight increment from table on proper size. °a Lower rate by water shipment. °b 50,000 lbs. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	78%c	78%a	$0.2615
Baltimore	74%d	76%d	.2615
Birmingham	82%	83%	.2065
Boston	73-10%'	73-10%	.2615
Chicago	72%	72%	.2615
Cincinnati	74%	74%	.2615
Cleveland	74-3-10%	74-3-10%	.3015
Dallas	76%	76%	.2690
Denver	74%	74%	.2665
Detroit	74-10-10%	74-10-10%	.2615
Kansas City	74-10-10%	74-10-10%	.2665
Los Angeles	70%	76%a	.2640
Minneapolis	71-10%	71-10%	.2665
Montreal	40-10-5%bc	40-10-5%b	23.05h
New Orleans	75%	76%	.2665
New York	79-10%	79-10%	.45g
Philadelphia	74-10%	76-10%	.2615
Pittsburgh	72%	72%	.2615
St. Louis	73-10-10%	72-10-10%	.2665
San Francisco	60%-25%	68%-25%	.2615
Seattle	67%	72%	.2640

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: °a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. °b sales tax extra. °c 77% for single strength °d Discount 6/15/52. °e 77% for double strength

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. °g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. °h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E of the Miss., except Fla and Me...	$0.2065	$0.2465	$0.2615
W of Miss. to Rocky Mtn. States, Fla. and Maine	.2115	.2515	.2665
Rocky Mtn. States	.2115	.2515	.2665
Pacific N. W. States	.2090	.2490	.2640
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.60/.68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.72/.88	.88
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/.98	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.09
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.29

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

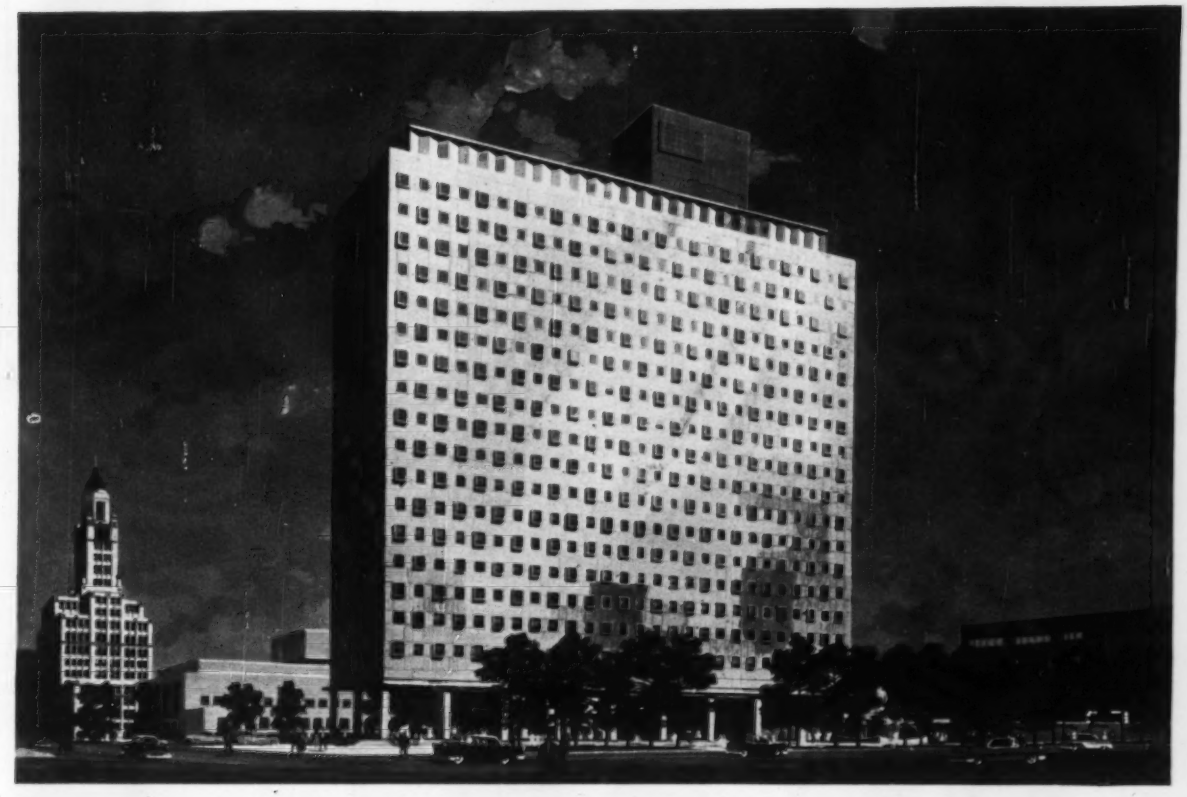
		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$3.55	Gr. 5 $2.25	$3.33
	Grade 2	1.80	2.35	" 4 2.10	3.15
	Grade 1	1.15	2.00	" 3a 1.70	3.75
Chicago	Red Oak	.....	4.00a	.....	4.80a
New York	S. L. Sap Pine	2.00	4.00	3.00	6.00g
	Mixed Oak	2.50	4.50	3.50	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.80/3.80	5.50/5.75
St. Louis	Mixed Oak	2.65	3.40a	2.90h	3.75ah
San Francisco	Douglas Fir	1.91ef	2.80ef	2.69ef	4.07caf

Tr.—Treated; Untr.—Untreated. a Creosoted. c Empty cell. e Green f f.o.b. cars. g 7 x 9 x 8' 6" * Add 75¢/tie freight charge to Birmingham. °h 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90



New Headquarters for state offices

It used to be that the Philadelphia offices of various agencies of the Commonwealth of Pennsylvania were scattered throughout the central-city area in rented quarters. But soon, upon completion of this striking structure, they'll all be housed here at Broad and Spring Garden streets.

Bethlehem ironworkers had virtually completed the seventeen office floors when the picture at left was taken. A tall penthouse yet to come will house a conference suite and mechanical equipment. Total net area for offices is to be 245,518 sq ft.

As shown in the rendering above, the ground floor is largely open, making the building appear to be on stilts. Exterior walls are of white domestic marble, and the entire building is to be air conditioned.

Initiating agency: Department of Property and Supplies; *financing and building agency:* The General State Authority; *collaborating architects:* Carroll, Grisdale & Van Alen; Harbeson, Hough, Livingston & Larson; Nolen & Swinburne. *General contractor:* John McShain, Inc.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Mass., Falmouth**—DINING HALL—BA On Or About 3/19—U. S. Eng., 150 Causeway St., Boston, airmen's dining hall, Otis Air Force Base, ENG-19-016-58-84. $500,000-$550,000. Plans deposit $10. CD 8/21/56.

BUILDINGS—BA

Mass., Lynnfield—SCHOOL—BA 3/5—Town, Elementary School Bldg. Comm., High School, Main St., Huckleberry Hill Elementary School, off Summer St. $725,000. Plans deposit $50. Rich & Tucker Assocs., 45 Newbury St., Boston, archts. CD 8/5.

HEAVY CONSTRUCTION—LB & CA

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston. Bids opened 2/4.

Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB $103,508, est. $108,808, relocate Beach Terminal Rds. and parking areas, Race Point, Provincetown. CD 1/22.

Johnson Bros., Inc., 542 Southbridge St., Auburn, Mass., LB $127,462, est. $149,919, constr. outlet works, Van Horn Park, SPRINGFIELD, MASS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Green Engineering Affiliates, Inc., 84 State St., Boston, Mass., engr. Bids Feb. 4. CD 1/30.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. J., East Orange—BA 2/24—Bd. Water Comrs., City Hall, furnishing housing, transformer installations, and motor controls, misc. electrical installations, electrical power transmission installations, telephone cable installations, meters and gauges, telemetering and pipe line installations, etc. for 10 new wells at various sites in the East Orange Water Reserve, and incl. misc. work at 3 existing well houses and at the White Oak Ridge Pumping Station, $400,000, Plans deposit $25, Angus D. Henderson, 330 Winthrop St., Westbury, N. Y., consult. engr.

BUILDINGS—BA

▲ **D. C., Wash.**—HOUSING—BA 2/27—National Capital Housing Auth., 1729 New York Ave. N.W., 183 dwelling units Housing Proj. DC1-31, Sheridan Terrace, on Sheridan Rd. between Howard and Pomeroy Rds. S. E. $1,800,000. Plans deposit, $50. Brown, Chapman, Taher & Miller, 1000 Vermont Ave., N. W., archts. Extended date. CD 1/31.

BUILDINGS—SLC

▲ **D. C., Wash.**—APARTMENTS—City Investing Co., 25 Broad St., New York, N. Y., soon lets contract 3 apartment bldgs., Westchester Apartments Addns., 4000 Cathedral Ave. N. W. $5,000,000-$6,000,000. Harry M. Price, 101 Park Ave., New York, N. Y., archts.

▲ **N. J., Florham Park**—RESEARCH CENTER—Esso Research & Eng. Co., U. S. Hy. 1 and Park Ave. S., Linden, soon lets contract research center, $5,000,000. Voorhees, Walker, Smith & Smith, 101 Park Ave., New York 17, N. Y., archts. CD 3/1.

HEAVY CONSTRUCTION—LB & CA

▲ **Ralph Tomasetti & Co.**, 1611 73 St., Brooklyn 4, N. Y., CA $1,178,051, combined sewer, appurtenances in 11 Ave. from point about 95 ft. west of Whitestone Parkway, westerly service roadway to Whitestone Parkway, westerly service roadway, thence easterly across Whitestone Parkway to intersection of 145 Pl. and 13 Ave., 13 Ave. from 145 Pl. to 147 St. across Cross Island Parkway from northerly service roadway to intersection of 13 Ave. and 147 St., 147 St. from 13 to 15 Aves., 15 Rd. from 15 Ave. to 149 St., 149 St. from 15 to 16 Rds., 16 Rd. from 149 to 150 Sts., 3 Ward, NEW YORK. President Queens Boro, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids Dec. 26. CD 1/2, under LB.

† **Walter Balfour & Co., Inc.**, 404 Oakland St., Brooklyn, N. Y., CA $522,500, replacing cargo doors, Pier Shed No. 2, Brooklyn Army Terminal, Serial No. ENG-30-075-58-88, BROOKLYN, N. Y. U. S. Eng., 111 E. 16 St., New York, Zone 3, N. Y. Bids Jan. 22. CD 1/27, under LB.

George B. Clarke & Sons, Inc., 525 Main St., Westbury, N. Y., LB $316,909 (9 bidders) storm water drains Kensington Ave. and 8th St., West Hempstead, HEMPSTEAD, N. Y. Town Bd., Town Hall, Front St., Hempstead, N. Y. Bids Jan. 28. CD 1/23.

▲ **Arthur A. Johnson Corp. & Peter Kiewit Sons Co.**, 347 Madison Ave., New York 17, N. Y., LB $9,160,885, constr. part of rapid transit railroad, Sect. 3 of Route No. 112, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Feb. 7. CD 12/31.

† **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., cancelled bids to have been opened about Mar. 5, alterations to central heating plant, FY 1958 program at Griffiss Air Force Base, ENG-30-075-58-169, ROME, N. Y. $400,000-$600,000. CD 1/28.

BUILDINGS—LB & CA

▲ **Soverign Constr. Co.**, 1181 Broadway, New York 1, N. Y., CA $2,166,808, MUNICIPAL AUDITORIUM and sports arena, Whitsboro and Oriskany Sts., UTICA, N. Y. City, City Hall, Utica, N. Y. Bids Dec. 6. CD 12/16.

▲† **Green Manor Estates, Inc.**, Manchester, Conn., LB $10,679,000, (5 bidders) 702 Capehart HOUSING UNITS, FORT DIX, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. (Correction—low bidder), CD 2/10, under LB.

Isaac Debenaarts, 213 Greenwood Ave., Midland Park, N. J., LB $441,600 (12 bidders), general contract ELEMENTARY SCHOOL, Ridgewood Ave., PARAMUS, N. J. Bd. Educ., Paramus, N. J. Awarded Feb. 6. CD 10/16/56.

Paul Waldinger, c/o Gabriel Johnson Realty Co., 1116 Saddle River Rd., Fair Lawn, N. J. Owner Builds. $380,000, 19 HOME addn. at Fairview Knolls off Fairview Ave., PARK RIDGE, N. J. C. J. Kordys, 116 Passaic St., Passaic, N. J., archt.

David Himnelblau & Julian Levin, 679 Winchester Ave., Union, N. J. Owner Builds. $500,000, 21 HOUSES on tract adjoining existing Winchester Park on Winchester Ave., UNION, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Quincy—BA 3/11—City of Quincy, Courtroom of Gadsden Co. Courthouse, Div. 11, water main, tanks foundations and appurtenances, Plans deposit $20; Div. 111, 500,000 gal elevated tank, Plans deposit $10. Wiedeman & Singleton, Box 1878, Atlanta Ga., engrs.

Fla., Quincy—BA 3/11—City of Quincy, Courtroom of Gadsden Co. Courthouse, Div. 1, 1.5 mi. gpd. sewage treatment plant. Plans deposit $25. Wiedeman & Singleton, Box 1878, Atlanta, Ga., engrs.

† **S. C., Beaufort**—AIR STATION FACILITIES—BA 3/18—P. Wks. Officer, 6th Naval Dist., Naval Base, Dpt. Navy, Charleston, telephone exchange bldg., U. S. Marine Corps Aux. Air Station, NBy-13946, Spec. 13946/57. CD 9/17.

BUILDINGS—BA

Fla., Tampa—Y.W.C.A.—BA 2/26—Y.W.C.A. Corp., 601 Twiggs St., 4 story, approx. 105x211 ft. Y.W.C.A. Bldg. and swimming pool, Pierce and Twiggs Sts. $700,000. James H. Kennedy, First National Bank, archt. CD 12/24/57.

HEAVY CONSTRUCTION—LB & CA

▲ **NORTH CAROLINA**—State Hy. Dpt. Comn., Raleigh, N. C.—**Propst Constr. Co.**, Box 752 Concord, N. C., CA $530,229, Proj. 8.15143 S-910 (1) SABC and BST 10.97 mi. N.C. 86 from U.S. 156 in Yanceyville, northwest to Virginia State Line, Caswell Co.;

N. C.—**Asheville Contg. Co.**, Box 5119 Biltmore Station, Asheville, N. C., CA $1,471,275, Proj. 8.19465 1-719 (3) grading, structures proposed interstate 3.63 mi. from Waterville Dam on Pigeon River to point 0.5 mi. northwest of Fines Creek, Haywood Co.;

N. C.—**Dickerson, Inc.**, Monroe, N. C., BA $610,435, Proj. 8.92967 F-117 (8) F-188, STBC, CABC, and b. conc. binder and surface 8.98 mi. US 301 from point 2.2 mi. north of Wilson City limits, north to south end of Rocky Mount by-pass Wilson and Nash Counties. Grand total $2,611,939. Bids Jan. 28, awarded Feb. 5. CD 1/31, under LB.

KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort, McDade & McDade, Fulton, Ky. and Corbett Davidson & Son, Mayfield, Ky., CA Est. $523,560, bit. surf. 6.885 mi. The Mayfield-Tri-City Tennessee State Line (Ky. 97) Road from Kentucky-Tennessee State Line, extending northerly to Tri City, S 646 (1) SP 42-128, Graves Co. Bids Nov. 22. CD 12/3, under LB.

BUILDINGS—LB & CA

▲ **Baker & Coombs, Inc.**, 601 E. Brockway Ave., Morgantown, W. Va., LB $1,017,00, MEN'S DORMITORY, W. Va. University, MORGANTOWN, W. VA., W. Va. University Bd. Governors, Morgantown, W. Va. Bids Feb. 4.

▲ **H. W. Ivey Constr. Co.**, 3133 Maple Dr. N. E., Atlanta, Ga., LB $3,117,565, BIOLOGICAL SCIENCES BLDG., for Science Center, ATHENS, GA. University System Bldg. Auth., 244 Washington St. S.W., Atlanta, Ga. Bids Jan. 30. CD 12/12.

Thompson Constr. Co., Box 413, Charleston, S. C., LB $452,245, JUNIOR HIGH SCHOOL, BRUNSWICK, GA. Glynn Co. Bd. Educ., Brunswick, Ga. Abreu & Robeson, Inc., 1522 Richmond St., Brunswick, Ga., archt. Bids Jan. 31.

W. F. Thompson Constr. Co., 3228 Ponce De Leon Blvd., Coral Gables, Fla., CA $889,999, Biscayne Gardens JUNIOR HIGH SCHOOL, N.W. 147th St. and NW 6th Ave., MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 NW 2nd St., Admin. Bldg., Miami, Fla. Bids Jan. 22. CD 1/29, under LB.

A. P. Hennessy, 2300-22nd St. North, St. Petersburg, Fla., LB $549,450, St. Petersburg Times PRESSROOM & PAPER WAREHOUSE, 13 Ave. and 34th St. No., ST. PETERSBURG, FLA. St. Petersburg Times, Nelson Poynter, Publisher, 440 First Ave. S., St. Petersburg, Fla. Bids Jan. 28. CD 1/24.

▲ **C. A. Fielland, Inc.**, Box 2678, Tampa, Fla., LB $713,000, Morrison's WAREHOUSE AND SERVICE BLDG., TAMPA, FLA. Morrison's Merchandising, 2910 Grand Central Ave., Tampa, Fla. Bids Jan. 21. CD 2/7, under LB;
Paul Smith Constr. Co., 310 North Rome Ave., Tampa, Fla., LB $713,000 (identical bid) Morrison's WAREHOUSE AND SERVICE BLDG. (Tampa, Fla.).

▲ **G. E. Bass & Co., Inc.**, 2715 N. State, Jackson, Miss., CA $2,078,033, Jefferson Davis Memorial HOSPITAL, NATCHEZ, MISS. Supervs. Adams Co., Natchez, Miss. John L. Turner & Assocs., 1224 N. West St., Jackson, Miss., archts. Bids Jan. 28.

▲ **Rock City Constr. Co.**, 4401 Kentucky Ave., Nashville, Tenn., LB $1,836,577, est. $1,500,000, STATE CAPITOL, BLDG. imprvs., incl. excav. 300 ft. tunnel from Charlotte Ave. entrance to elevators, NASHVILLE, TENN., Tenn. State Purch. Dpt., Nashville, Tenn. Bids 1/30. CD 1/14.

MIDDLE WEST

BUILDINGS—BA

▲ **Mich., Oak Park**—SCHOOL—BA 3/6—City, Bd. Ed., District No. 3, Zone 37, elementary school, North End Parklawn. $1,000,000. Plans deposit $50; $25 arch.; $20 mechanical; $20 electrical, if separately. O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 12/10, under LB.

▲ **Wis., Madison**—SERVICE—BA 3/27—University of Wisconsin, Madison, 6 story, bsmnt., L shaped Service Memorial Institute No. 2 addn. $2,010,000. Plans deposit $50. Grellinger & Rose, 757 N. Broadway, Milwaukee, Zone 2, archts. CD 3/15/57.

BUILDINGS—SLC

▲ **O., Cincinnati**—OFFICE—John Hibben Co., 7th and Walnut St., soon lets contract remodel 6 story office

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England — **Middle West**
Middle Atlantic — **West of Mississippi**
South — **Far West**

PROPOSED WORK

Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

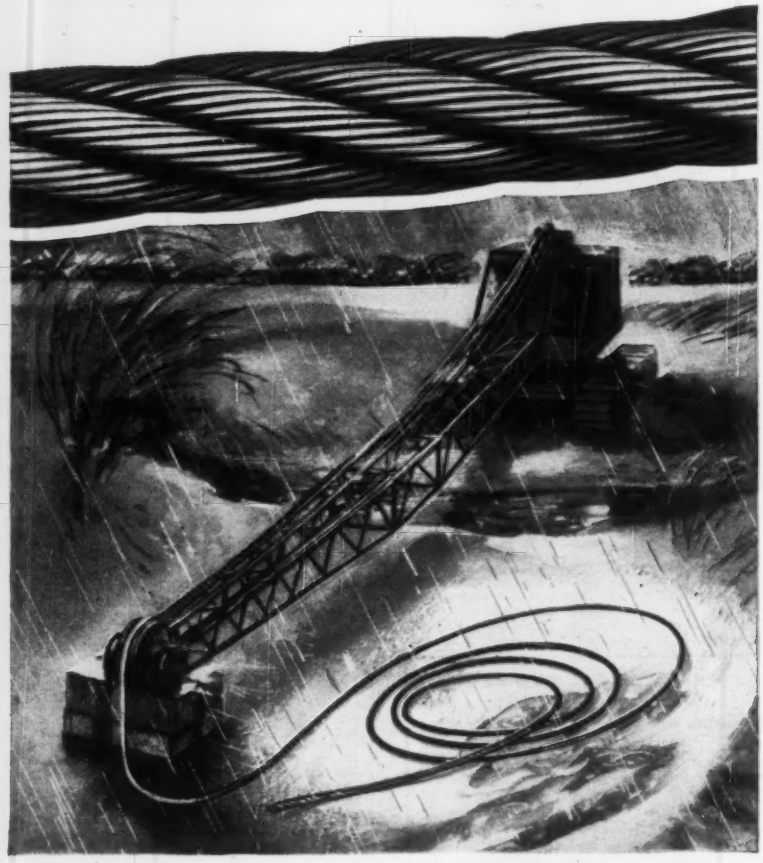
Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

storage...

is this your wire rope problem?



Avoid deterioration while equipment is idle. Red-Strand Bulletin No. 103 tells how.

Costly damage can be the penalty for improper outdoor storage of wire rope especially in winter. Several months of exposure can corrode rope so severely that breaking-strength is dangerously reduced with a loss much greater than the cost of adequate protection. How best to provide that protection is clearly explained in special Service Bulletin No. 103. This is one of a series, devised to help wire rope users get better performance without greater cost. Copies of bulletins are sent free on request. Write H. K. Porter Company, Inc.—Leschen Wire Rope Division, St. Louis 12, Mo.

LESCHEN
Red-Strand
WIRE ROPE

H. K. PORTER COMPANY, INC.
LESCHEN WIRE ROPE DIVISION

bldg., 7th and Walnut Sts. $1,000,000. Maxfield & Edwards, Coppin Bldg., Covington Ky. engrs. Geo. H. Godley, 918 E. Court, archt. CD 12/31.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15, Bids opened 1/21,

O.—**Frantz Bros., Inc.**, 313 E. Court St., Sidney, O., CA $849,633, USR 25 (2.12) (3.28) (5.08) (6.11), 1-063 (5) Type-35 on B.119, T-71 and structures 2.232 mi., Allen Co;

O.—**The General Asphalt Paving Co.**, 500 Main Court S. E., Canton, O., CA $1,095,091, USR 62, (& SR 39) (21.08-21-51) F-668 (2) Village of (Millersburg) Type T-35 on B-119 and structures 5.632 mi. Holmes Co.;

O.—**John Hill Contg. Co.**, North Plymouth, Lexington, O., CA $2,001,235, SR 16-21.52 U-UG-639 (4) (city of Newark) Type T-71 and structures 0.901 mi. Licking Co.;

O.—**Codell Constr. Co. & F. H. Hosea Co.**, 125 S. Main St., Winchester, Ky. CA $3,437,088, SR 1-03.17 AC1-1105-(11) Type T-71 and structures 6.630 mi. Morrow Co. Grand total $7,393,047. CD 1/31, under LB.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis,

Reith-Riley Constr. Co., Goshen, Ind., CA Est. $1,243,071, 4 mi. dual lanes on U. S. 41 project bypassing both Princeton and Patoka, Bids Dec. 27, awarded Jan. 20. CD 12/27.

Repp & Mundt, Columbus, Ind., CA $594,276, sewage treatment works; appurtenances Div. B, WEST LAFAYETTE, IND. Bd. P. Wks. & Safety, City Hall, West Lafayette, Ind. Bids Nov. 19. CD 12/12.

† **Procurement Office**, Bldg. 600, Truax Field, Madison, Wis., cancelled bids to have been opened Feb. 6, removal of 16 existing Bartow lights and replacing same with 16 type C-2 threshold lights, Runway 18-36, IFB 47-6-2-58-40, Proj. No. W. O. 58-285, Truax Field, MADISON, WIS. CD 1/28.

Manitowoc Shipbuilding Co., S. 16 St., Manitowoc, Wis., LB $112,295 (4 bidders), rotary fine screens, MILWAUKEE, WIS. Sewerage Comn. of City of Milwaukee, P.O. Box 279, Milwaukee, Wis. Bids Feb. 4. CD 1/6.

W. J. Lazynski, Inc., 4445 N. 124 St., Milwaukee 16, Wis., CA $142,003 (5 bidders), storm sewer in E. Birch Ave., WHITEFISH BAY, WIS. Village, 801 Lexington Blvd., Milwaukee 17, Wis. Bids Jan. 27, awarded Feb. 3. CD 1/17.

Dearborn Excavating Co., 452 Fort Dearborn St., Dearborn, Mich., CA $203,750, Contr. No. WS-73C, 4,744 lin. ft. 54 in. water main, connections, appurtenances and related structures adjacent to Ford Rd. between Greenfield and Southfield Rds. in Dearborn, DETROIT, MICH. City, F. J. Pipp, secy. Bd. Water Comrs., 735 Randolph Detroit 26, Mich. Bids Jan. 8. CD 12/31.

Lakeview & Salvatore, 29875 Park, Roseville, Mich., LB $149,973 (combined bid) sanitary sewer constr. parts of Avon, Couchez, Greater Mack, Hoffman, Violet, Evergreen and Dorian, ST. CLAIR SHORES, MICH. City, Donald J. Harm, clk., 27600 Jefferson Ave., St. Clair Shores, Mich. Bids Jan. 17.

BUILDINGS—LB & CA

▲ **Sam Arnoff**, 3308 Lorain Ave., Cleveland 13, O., CA Est. $4,000,000, 220 HOMES, Tideman Rd. near Lamson-Session Plant, BROOKLYN, O. Alex Fodor Realty Co., 3308 Lorain Ave., Cleveland 13, O. CD 9/8/55.

▲ **Chillicothe Realty Co.**, Chillicothe, O., CA 70 x 72 ft. steel, brick BLEACH PLANT, CHILLICOTHE, O. Mead Corp., 3325 Madison Rd., Cincinnati, O.; **Maxon Constr. Co.**, 2600 Far Hills Ave., Dayton, O., CA 2 and 3 story, 120 x 240 ft. WAREHOUSE Addn., loading docks, (CHILLICOTHE, O.)

▲ **Ferro Concrete Constr. Co.**, Gwynne Bldg., Cincinnati, O., CA Approx. $5,500,000, HOSPITAL addn., CINCINNATI, O. Christ Hospital, Auburn Ave., Cincinnati, O. CD 8/13/56.

H. W. Miller Constr. Co., 1519 Neave, Covington, Ky., CA $564,500 (5 bidders) 3-4 story rein.-con. 112 room HOME FOR AGED, addns., alterations, Lafayette St. CINCINNATI, O. Bethesda Hospital, Oak and Winslow, Cincinnati, O. Bids Jan. 29, awarded Feb. 5. CD 1/13.

▲ **George J. Goudreau Co.**, 9801 Brookpark Rd., Cleveland 30, O., Own Forces, $1,840,000, constr. 92 HOMES Pearl-Snow Rd. area, PARMA HEIGHTS, O. CD 3/27/56.

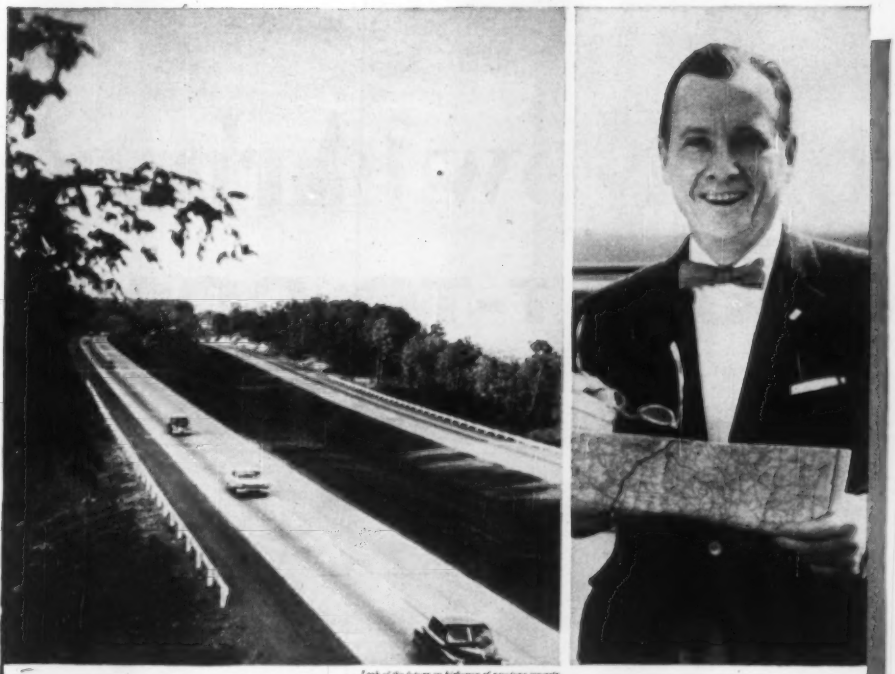
▲ **Huber, Hunt & Nichols**, 2450 Stebbs St., Indianapolis, Ind., CA $1,105,000, 3 story, bsmnt., 116 x 122 sq. ft., fire resistive, Lilly Rare Book LIBRARY, BLOOMINGTON, IND. Bd. Trustees Indiana University, J. A. Franklin, vice pres. and treas., Bloomington, Ind., Bids Jan. 8. CD 12/16.

† **Dist. P. Wks. Office, Ninth Naval Dist.**, Building 1-A, Great Lakes, Ill., cancelled bids to have been opened Jan. 10, OXYGEN STORAGE AND DISTR. SYS. in Bldg. 1-A, Spec. No. 12625/57, FOREST PARK, ILL. CD 12/17.

▲ **Slavik Builders, Inc.**, 20063 James Couzens, Detroit, Mich., Owner Builds, $15,000,000, 700 HOMES "Burton Hollow Estates", Farmington and Six-Mile Rds., LIVONIA, MICH.

▲ **Salem Building Co.**, 570 Livernois, Ferndale, Mich., CA Est. $1,300,000, 80 brick HOMES, ROYAL OAK, MICH. Bruton Realty Co., (agt.) 15100 Fenkell, Detroit, Mich.

(Continued on page 86)



Look of the future on highways of new-type concrete.

"I drove the new-type, sound-conditioned concrete—and couldn't believe my ears!"

reports JOHN CAMERON SWAYZE, noted TV and radio news analyst

Quiet as rolling over a pencil line! Cushion spaces in new-type concrete are sawed in by a blade only ¼" thick. Tires never know they're there!

"You'll hear no thumps on this continuous-laid concrete. There are none! It's bringing the riding comfort of 1975 *now* . . . on highways of our new Interstate System."

Every ride is a pleasure on new-type concrete! Smooth, hushed. For *sound-conditioned* means no joints . . . only tiny, barely visible cushion spaces *sawed* into the concrete. Not a thump to be heard, or felt.

Highway engineers helped make this concrete smoother riding in other ways, too. It's "air entrained"—filled with billions of minute air cells that prevent surface roughening from severe weather or de-icers. A special granular base keeps the pavement flat.

New-type concrete has a life expectancy of 50 years and more—with up to 60% less upkeep cost than for asphalt. Yet initial cost is modest.

And what could be *safer*? Rain or shine, concrete's grainy surface gives dependable skid resistance. At night, its light color lets you see far better than on dark surfaces.

Concrete has been used for over 90% of America's most heavily traveled roads. Only this material can be accurately engineered to stand up to future traffic loads. That's why concrete is preferred for the 41,000-mile Interstate System to link 209 major cities throughout 48 states.

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ONE OF A SERIES appearing in full color in such magazines as *The Saturday Evening Post*, *Look*, *Fortune* and *Reader's Digest*.

John Cameron Swayze helps tell today's highway story to the driving public

One of America's best-liked news analysts is featured in this timely PCA message which will be seen by more than 47 million Americans of driving age.

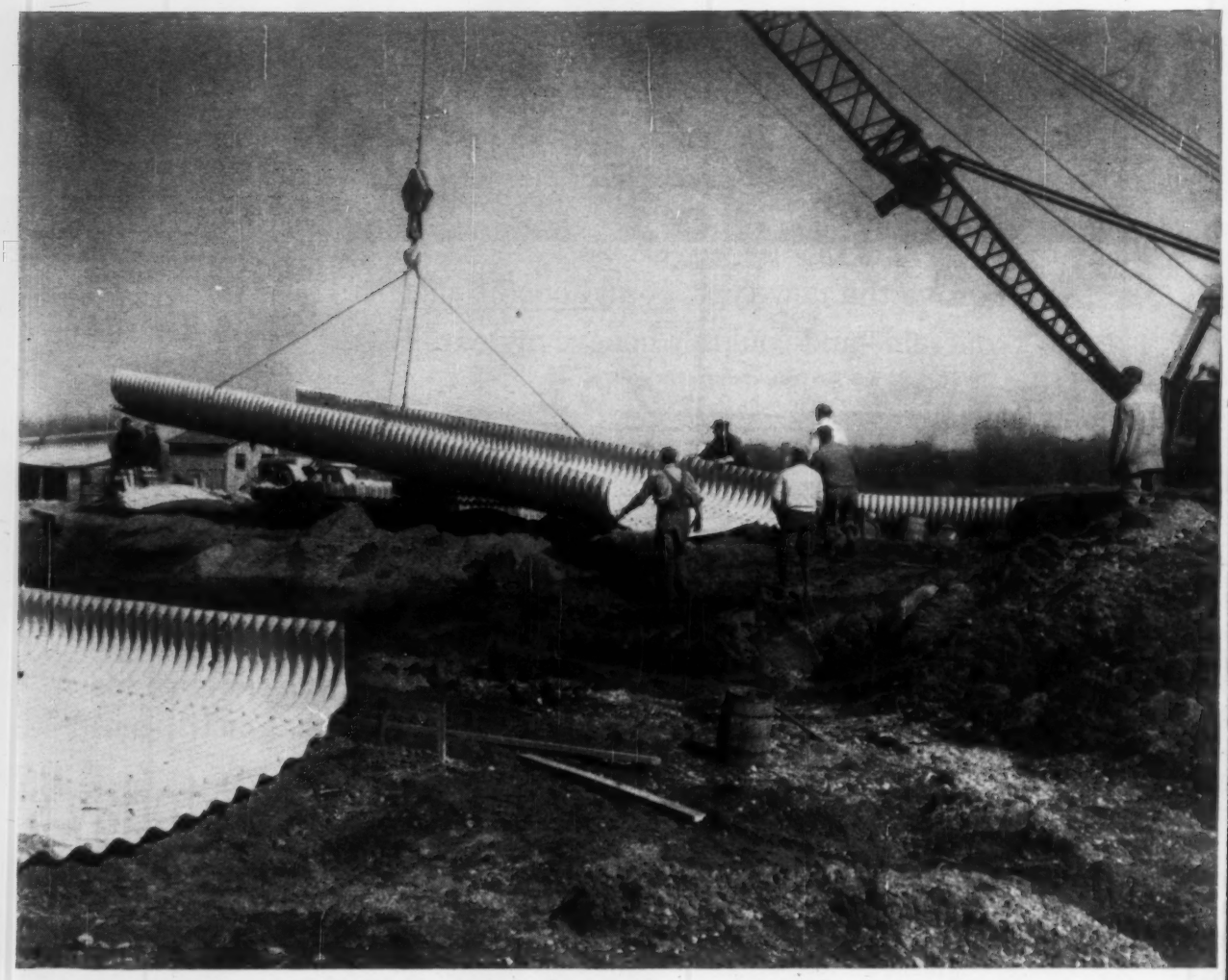
Other well-known personalities will follow him in PCA's new national advertising program in popular consumer magazines. It's a program dedicated to informing the public about today's new, finer, smoother-riding concrete pavements. It will interpret in a lively way to the public facts and features long familiar to you. It will do its part to help make your efforts more productive . . . especially in reaching the goal of 41,000 miles of Interstate System highways, designed to the standards of 1975.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Look How Armco

WORK COAST-TO-COAST



An important part of the Interstate Highway System, US 40 in Ohio gets the "divided highway treatment" north of Dayton. Despite wet weather, the contractor was able to speed work on a stream enclosure by partly assembling big Armco MULTI-PLATE Structures on the bank and lifting the assemblies into the new stream bed. Earth fill finishes the job of providing a modern, maintenance-free bridge.

Armco

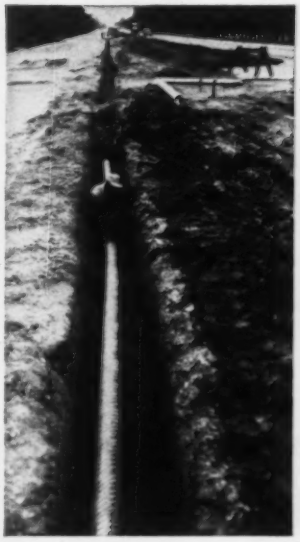
Products
ON US 40

Armco Retaining Wall controls slope below a wider Route 40 in Nevada.

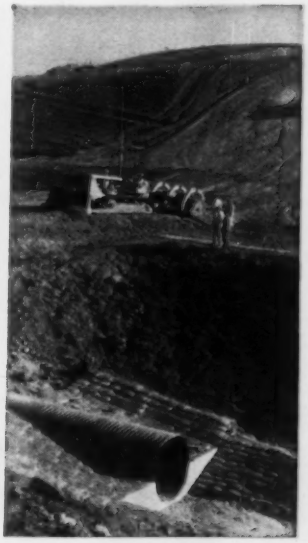
Playing a big role in the modernization and relocation of Route 40 from New Jersey to California, Armco Construction Products are serving a wide variety of needs. In Maryland, for example, designers have provided for dry, stable subgrades with subdrainage systems of Armco Perforated Pipe. In California, you'll find an Armco MULTI-PLATE® Pipe under a 165-foot fill, installed as part of a project involving the biggest highway cut ever undertaken.

In Nevada, an entirely different kind of highway construction problem was solved with an Armco Product. A few miles east of Reno the mountainous terrain, plus a railroad right-of-way, restricted construction of a new dual roadway. The answer was an Armco Bin-Type Retaining Wall. It provides a "shelf" for the wider road, keeps the steep slope from encroaching on the railroad.

In addition, Armco Pipe Piling serves as the foundation for important new grade separation structures. Add the protection of strong, easy-to-see Armco FLEX-BEAM® Guardrail at many key locations along Route 40 and you have an idea of the variety and versatility of the family of Armco Construction Products. There are good reasons why they have won acceptance by the builders of the Interstate Highway System. Foremost—*they have been proved in service.* Write us for data or assistance with your specific construction project. Armco Drainage & Metal Products, Inc., 4038 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



Armco Perforated Pipe is installed for Route 40 subdrainage in Maryland.

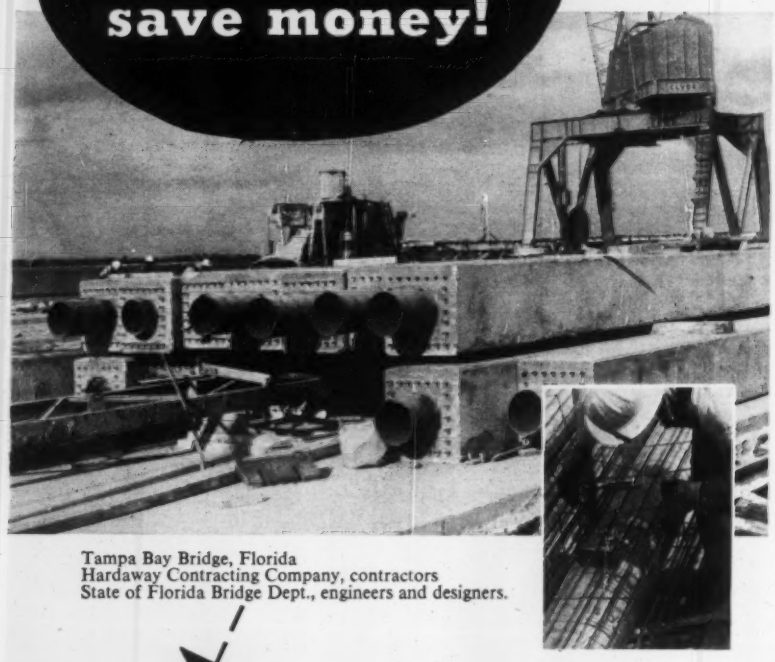


Fill over this 72-inch MULTI-PLATE Pipe will be 165 feet when this US 40 project is completed in California.

Armco Spiral Welded Pipe Piling being driven for foundation of grade separation structure at Route 25 and Route 40 in Ohio.

Construction Products

Voided bridge piles save money!



Tampa Bay Bridge, Florida
Hardaway Contracting Company, contractors
State of Florida Bridge Dept., engineers and designers.

Precast, prestressed concrete piles contain

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FIBRE TUBES

The Tampa Bay Bridge connects Tampa and St. Petersburg, Florida and is a 3-mile long structure accommodating four lanes of traffic.

Piles for the project are 24" square, precast, prestressed concrete containing 12" O.D. Sonoco SONOVOID Fibre Tubes and twenty-four 7/16" seven-strand pretensioning cables.

There are 285,000 linear feet of piles varying in length from 60 to 110 feet. The average pile length is 75 ft. and despite these rather long piles, it is reported that the cost of the structure is very low.

Sonoco SONOVOID Fibre Tubes were specifically developed for use in bridge decks, floor, roof and lift slabs and in concrete piles. For prestressed precast units or units cast in place.

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3233

(Continued from page 82)

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† **N. M., Roswell**—STORAGE, BASE, ROCKET ASSEMBLY—BA About 3/5—U. S. Eng., P.O. Box 1538, Albuquerque, 1 story, 112x120 ft. addn. to an existing bldg, Walker Air Force Base, ENG-29-005-58-58. CD 12/20.

† **Tex., El Paso**—TRAINING BLDG—BA About 3/6—U. S. Eng., Box 1538, Albuquerque, N. M., target intelligence training bldg., Biggs Air Force Base. ENG-29-005-58-72. CD 9/17.

† **Minn., Duluth**—STORAGE BASE—BA On Or About 3/18— U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, constr. storage base, aviation fuel at Duluth Air Force Base, Inv. No. ENG-21-018-58-11. CD 9/18.

▲† **Tex., Lackland Air Force Base**—TEACHING ADDN.—BA About 4/1—U. S. Eng., 606 Santa Fe Bldg., Galveston, 500 bed teaching addn. to U. S. Air Force Hospital, ENG-41-243-58-22. $3,000,000-$5,000,000. CD 8/21/56.

BUILDINGS—BA

Colo., Golden—GYMNASIUM—BA 2/25—Colorado School of Mines, Golden, 3 story, 56,000 sq. ft. gymnasium. $750,000. Fuller, Fuller & Fuller, 503 Insurance Bldg., Denver, archts. CD 2/1/57.

† **Mo., St. Louis**—PLANT REHABILITATION—BA On Or About 2/26—U. S. Eng., 1800 Federal Bldg., Kansas City, Mo., rehabilitation of steel plant, 6691 Manchester Ave., Inv. No. ENG-23-028-58-27.

Mo., University City (St. Louis 5, P.O.)—SCHOOL—BA 2/26—School Dist. of University City, Bd. Educ., Philip A. Katzman, pres., 6701 Delmar Blvd., Zone 5, 1 story elementary school between Montreal and Paramount Aves. $350,000. Rathmann, Koelle & Carroll, 316 N. 8th St., St. Louis, Zone 1, archts. CD 9/12.

▲ **Tex., La Porte**—SCHOOL—BA 3/4—La Porte Independent School Dist., 1 and 2 story, 90,000 sq. ft. masonry High School. $1,000,000. Matt E. Howard, Jr. & Assocs., 2444 Times Blvd., engrs.-archts. CD 4/29.

▲ **Tex., Tyler**—HOSPITAL—BA 3/5—Smith Co., Tyler, 57 unit wing, East Texas Hospital. $1,000,000. Shirley Simons & Sons, 1723 S. Broadway, archts. CD 5/18/56.

▲ **Mo., Kansas City**—HOUSING—BA 3/6—Kansas City Housing Auth., Forest D. Bayers, chn., 1220 Independence Ave., Kansas City, Mo. Penmway Plaza Housing, 42 bldgs. $3,600,000. Plans deposit $50. Tanner & Mitchell, 310 Warl Parkway, Kansas City 12, Mo., archts. CD 7/18, under LB.

† **N. M., Las Cruces**—WAREHOUSE—BA About 3/13—U. S. Eng., P.O. Box 1538, Albuquerque, approx. 52x275 ft. concrete frame masonry panel film storage and inflammable warehouse, White Sands Proving Ground, ENG-29-005-58-74. CD 11/22.

BUILDINGS—SLC

Tex., Haskell—POWER STATION—West Utilities Co., T. J. McCarley, Abilene, soon lets contract superstructure for Paint Creek Power Station, Unit 3, Spec. A-1488. $250,000.

HEAVY CONSTRUCTION—LB & CA

▲ **Ashbach Constr. Co.**, 1910 West County Rd. C, St. Paul, Minn. LB **$2,579,570.** (8 bidders), Contr. No. 2, furnish, construct about 41,739 lin. ft. 60 in. water conduit, etc., from Mississippi River to Pleasant Lake., ST. PAUL, MINN. City, O. P. Simon, Jr., purch. agt., 253 City Hall, St. Paul, Minn. Bids Feb. 4. CD 1/15.

IOWA—State Hy. Comn., Ames, Bids opened 2/4,
Iowa—**F. A. Moser**, Farmersburg, Iowa. LB **$197,607.** bridges and culverts, group 1, I-01-2 (4), Adair Co.;
Iowa—**Christensen Bros.**, Cherokee, Iowa LB **$97,414.** bridges and culverts, group 1, I-01-2 (5), Adair Co.;
Iowa—**Jensen Constr. Co.**, 1901 Easton Blvd., Des Moines, Iowa. LB **$86,973.** bridges and culverts, Group 2, I-01-2 (5), Adair Co.;
Iowa—**Graves Bros.**, Melvin, Iowa. LB **$76,455.** bridges and culverts, I-03-6 (6), Woodbury Co. CD 1/22.

▲ **IOWA**—State Hy Comn., Ames, Bids opened 2/4,
Iowa—**Kaser Constr. Co.**, 3111 Ingersoll St., Des Moines, Iowa, LB **$122,199,** b. conc. 9.457 mi. C-113 (3), Cerro Gordo Co.; LB **$122,743,** b. conc. 4.933 mi. S-579 (2), Hamilton Co.; LB **$109,238,** b. conc. 4.510, S-2028 (2), Hamilton Co.; LB **$100,033,** b. conc. 4.814 mi. 1958-20B, Hamilton Co.; LB **$145,991,** b. conc. 6.712 mi., S-835 (3), Humboldt Co.; LB **$168,640,** b. conc. 6.498 mi., C-258, Story Co.;
Iowa—**Mauer Constr. Co.**, Sac City, Iowa, LB **$119,938,** b. conc. 5.999 mi. S-202 (3), Buena Vista Co.; LB **$140,561,** b. conc. 6.014 mi., S-849 (3), Cherokee Co.; LB **$351,169,** b. conc. 14.493 mi., 1-AC-58, Cherokee Co.; LB **$118,008,** b. conc. 5.116 mi., S-249 (4), O'Brien Co.; LB **$122,659,** b. conc. 5.455 mi., T-FK-58, O'Brien Co.;
Iowa—**Lee & Johnson Inc.**, 215 Ins. Exch. Bldg., Sioux City, Iowa, LB **$100,714,** b. conc. 3.469 mi., S-1609 (4), Woodbury Co.; LB **$77,789,** b. conc. 2.712 mi., S-1609 (5), Woodbury Co.; LB **$79,863,** b. conc. 2.936 mi., S-2067 (2), Woodbury Co.; LB **$137,562,** b. conc. 4.772 mi., T-2066, Woodbury Co.;
Iowa—**E. M. Duesenberg, Inc.**, Box 1188, Mason City, Iowa, LB **$159,939,** c. conc. 5.040 mi., S-923 (7), Pocahontas Co.; LB **$139,308,** c. conc. 4.375 mi., T-158A and B, Pocahontas Co.; LB **$159,187,** c. conc. 5.003 mi., T-458, Pocahontas Co.;

Iowa—**Greene Limestone Co.**, Greene, Iowa, LB **$105,546**, rolled stone base and bit. surf. 6.036 mi., S-208 (4), Butler Co.; LB **$84,920**, rolled stone base and bit. surf. 4.973 mi., S-865 (2), Butler Co.; LB **$114,973**, rolled stone base and bit. surf. 6.897 mi., ED-235, Butler Co.;

Iowa—**Fred Carlson Co.**, Decorah, Iowa, LB **$123,581**, c. conc. 0.934 mi. F-619 (8), Guthrie Co.; LB **$220,-131**, c. conc. 1.657 mi. FN-140, Kossut Co.;

Iowa—**Booth & Olson, Inc.**, 529 Ins. Exch. Bldg., Sioux City, Iowa, LB **$210,752**, c. conc. 1.406 mi., FN-70, Mahaska Co.; LB **$226,439**, c. conc. 0.867 mi., U-293 (5), Mahaska Co.;

Iowa—**Hallett Constr. Co.**, Crosby, Minn., LB **$217,661**, c. conc. 6.382 mi., S-952 (4), Polk Co.; LB **$204,116**, c. conc. 6.147 mi. Co. 795, Polk Co.;

Iowa—**Boswell Constr. Corp.**, 218 Ins. Exch. Bldg., Sioux City, Iowa. LB **$126,807**. c. conc. 0.586 mi. FN-342, Sioux Co.;

Iowa—**Iowa Road Bldg. Co.**, Fairmont, Minn. LB **$122,708**. b. conc. 5.26 mi., SN-374 (4), Emmet Co.;

Iowa—**J. D. Armstrong Co., Inc.**, Ames, Iowa. LB **$528,301**. grading 6.909 mi. I-01-2 (5), Adair Co. CD 1/22.

Jackson Co. Court, c/o Ray G. Cowan, presiding judge, Court House, Kansas City, Mo., rejected bids Feb. 3, Indian Creek-Dyke's Branch Joint Sewer Dist., Contr. 2, Sec. I, constr. pump station, holding tank, valve manhole, misc. structures, piping; Sec. II, constr. 8,642 ft. 20 in. rein.-con. force main, Jackson Co., MISSOURI and Johnson Co., KANSAS. **$400,000**. CD 1/14, under KANSAS-MISSOURI.

Squire Elec. Co. and Par Electrical Contractors, Inc., 1803 Swift, North Kansas City, Mo., LB **$111,779**, est. $135,000 (joint venture), Contr. No. K-62, expansion 69 KV transmission facilities, KANSAS CITY, KAN. Bd. P. Utilities, c/o C. Wells Haren, secy., Kansas City, Kan. Burns & McDonnell Eng. Co., 95 and Troost, Kansas City, Mo., engr. Bids Jan. 29. CD 8/25.

TEXAS—State Hy. Comn., Austin,

Austin Paving Co., P. O. Box 1590, Dallas, Tex., CA **$919,440**, grading, structures, storm sewers and c. conc. 2.632 Hy. Loop 12, between State Hy. 78 and Spur 244, Proj. U. 1089 (18), Dallas Co., Bids Jan. 22. CD 1/30, under LB.

▲† **Peter Kiewit Sons' Co.**, Box 8757, University Park Station, Denver, Colo. LB **$1,049,662**. Off-Site Facilities (Capehart Housing), Air Force Academy, (IFB) 05-613 58-28, COLORADO SPRINGS, COLO. Dpt. Air Force Constr. Agency, P.O. Box 1670, Colorado Springs, Colo. Skidmore, Owings & Merrill, 3333 N. El Paso St., Colorado Springs, Colo., archts.-engrs. Bids Jan. 30. CD 12/31.

▲† **Robert E. McKee**, 221 Washington Ave., Box 1706, Sante Fe, N. M., LB **$1,500,570**, general contract academic area paving, Air Force Academy, Contr. No. (IFB) 05-613-58-6, COLORADO SPRINGS, COLO. Dpt. Air Force, Box 1670, Colorado Springs, Colo. Bids Jan. 30. CD 1/16.

BUILDINGS—LB & CA

† **P. N. G., Inc.**, 1013 Hamilton Ave., Fort Wayne, Ind., CA **$612,355**, 27 Family HOUSING UNITS, Finland Air Force Station, Inv. 21-603-57-72, FINLAND, MINN. Purch. & Contracting Office, 343 Fighter Group, Duluth Municipal Airport, Duluth, Minn. Leo A. Daly Co., 633 Insurance Bldg., Omaha, Neb., archts. Bids Nov. 5. CD 11/20, under LB.

Ernest Vermillion Bldg. Contractor, 2813 East 85th St., Kansas City, Mo., LB **$438,833**, general contract Unit No. 2, brick, precast, concrete columns, steel, rein.-con. JUNIOR HIGH SCHOOL, RAYTOWN, MO. Raytown School Dist., c/o Joe Herndon, supt., Raytown, Mo. Bids Jan. 28. CD 1/30.

▲† **Girdler Constr. Div., National Cylinder Gas Co.**, General Office, 840 N. Michigan Ave., Chicago, Ill., CA **$3,400,000**, design and constr. hydrogen, nitrogen, and carbon dioxide producing and purifying units for HIGH ENERGY FUEL PLANT, for Dpt. Navy, MUSKOGEE, OKLA. Callery Chemical Co. (Sub. Mine Safety Applicate Co.) 230 N. Braddock St., Pittsburgh 8, Pa. CD 12/20/56.

Suburban Realty Co., c/o Texas National Bank Bldg., Houston, Tex., Separate Contracts. **$375,000**, STORE, off Homestead Rd., State Hy. 3, HOUSTON, TEX. CD 2/4/58.

Al J. Keller, Contractor, 123 Hubbard St., San Antonio, Tex., Owner Builds, **$367,750**, 18 DWELLINGS; **$350,000**, 14 DWELLINGS, SAN ANTONIO, TEX. CD 1/28.

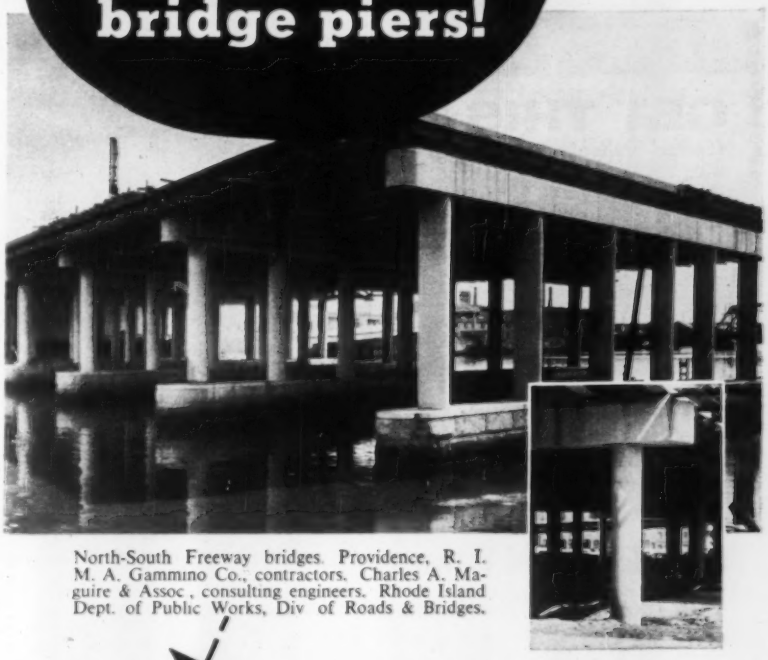
D. F. "Jack" Orts, 5307 Broadway, San Antonio 9, Tex. CA **$503,333**. BAKERY, SAN ANTONIO, TEX. Community Realty Co., c/o Reginald Roberts Assocs., archts., 2600 N. McCullough St. Bids 1/7. CD 1/15, under LB.

O. T. Atkinson & Fred Varner, Sherman, Tex., Owner Builds, **$366,000**, 22 DWELLINGS; **$351,500**, 18 DWELLINGS, SHERMAN, TEX. CD 1/20.

▲ **Mead & Mount Constr. Co.**, 633 Union Bldg., Colorado Springs, Colo., LB **$2,133,000**, general contract Northeast HIGH SCHOOL, COLORADO SPRINGS, COLO. School Dist. No. 11. 406 N. Weber, Colorado Springs, Colo. Bids Feb. 5. CD 11/6;
Olson Plumbing Co. 116 N. Weber, Colorado Springs, Colo., LB **$698,000**, plumbing contract, Northeast High School (Colorado Springs, Colo.).

▲ **Hensel Phelps Constr. Co.**, Box 604, Greeley, Colo., LB **$1,425,000**, general contract PLANT SCIENCE BLDG., GREENHOUSE, ANIMAL SCIENCE BLDG., FORT COLLINS, COLO. Colorado A & M College, Fort Collins, Colo. Bids Jan. 28. CD 12/11;
H. Horton Plumbing Co., Greeley, Colo., LB **$429,960**. mechanical contract (Fort Collins, Colo.).

Money-saving forms for bridge piers!



North-South Freeway bridges. Providence, R. I. M. A. Gammino Co., contractors. Charles A. Maguire & Assoc., consulting engineers. Rhode Island Dept. of Public Works, Div. of Roads & Bridges.

Round concrete piers formed with

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PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

DEPENDABLE
SACHSE ELECTRIC INC.
BATON ROUGE LA

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 2/28—Los Angeles Flood Control Dist., 751 S. Figueroa St., constr. La Jolla Ave. and Fairfax Ave. Relief Drain. Bond Issue Proj. No. 87, $1,400,000 CD 11/7/52

† **Calif., Oxnard**—RUNWAY, etc.—BA-3/4—U. S. Eng., 751 S. Figueroa St., Los Angeles, runway and taxiway extension, Oxnard Air Force Base, ENG-04353-57-124, $900,000. CD 7/18, under LB.

▲ **Calif., Los Angeles**—BA 3/6—Metropolitan Water Dist. of Southern California, 6 mi. 78 in. pipe line Second San Diego Aqueduct, in Riverside and San Diego Counties, $1,750,000.

▲† **Oregon**—BA 3/18—Bureau Reclamation, Dpt. Interior, Culver, furnishing labor and materials for Wasco Dam, Wapinitia Project, Spec. No. DC-5022; adv. ENR 2/20. CD 9/17.

BUILDINGS—BA

▲ **Calif., San Bernardino**—HOSPITAL—BA 3/1—Bd. Supervs. San Bernardino Co., Courthouse, Phase 2, 5 story, rein.-con. addn. to San Bernardino Co. Hospital. $1,500,000. Jay Dewey Harnish & W. W. Fickes, 222 E. "B" St., Ontario, archts. CD 4/1.

Calif., Pomona—LIBRARY—BA 3/5—Calif. Div. Architecture, 1100 S. Grand Ave., Los Angeles, 2 story, 65,760 sq. ft., frame library bldg. at Calif. State Polytechnic College, Kellogg Campus. $993,600. Plans deposit $50. CD 1/10.

▲ **Calif., Long Beach**—HARBOR DEPT. ADMIN.—BA 3/6—Long Beach Harbor Dpt., 1333 El Embarcadero, 7 story harbor department admin. bldg. $2,643,000. CD 3/14.

▲ **Calif., Atascadero**—WARD BLDGS., etc.—BA 3/12—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 1 story, concrete block ward bldgs. and office addn. Atascadero State Hospital. $1,467,400. Plans deposit $50. CD 7/26.

▲ **Calif., Los Angeles**—HALL OF ADMINISTRATION—BA 4/2—Los Angeles Co. Bd. of Retirement, 8 story Los Angeles Co. Hall of Administration Bldg., $23,693,000. CD 8/22/55.

▲ **Nev., Las Vegas**—COURTHOUSE—BA 4/7—Clark Co., County Clerk, Courthouse, nocstr. rein.-con. Curtain wall, stud and plaster partitions courthouse, air-conditioning also altering present courthouse bldg. $3,500,000. Plans deposit $100. Ziek & Sharp, 1806 S. Main St., archts. Welton, Becket & Assocs., 5657 Wilshire Blvd., Los Angeles, Calif., engrs. CD 9/13/55.

HEAVY CONSTRUCTION—LB & CA

† **Reliance Enterprises**, 427 South Davis St., Santa Rosa, Calif., LB **$247,744**, ramp and hangar electrification, multi-conduit rein.-con. primary electrical duct 1,400 lin. ft.; pole replacements, generator, concrete block bldg., ENG-58-305, HAMILTON AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. CD 9/18.

▲ **E. V. Lane Corp.**, 2675 Park Blvd., Palo Alto, Calif., LB **$2,126,430** (10 bidders) installing Pumping Units 7, 8 and 9 at 5 pumping plants on Colorado River Aqueduct, LOS ANGELES, CALIF. Metropolitan Water Dist., 306 W. 3 St., Los Angeles, Calif.

▲ **R. V. Lloyd Co.**, P.O. 128, Coachella, Calif., CA **$1,625,537**, est. $2,000,000 (14 bidders) constr. sewage collection system and sewage trunk lines, SAN BERNARDINO, CALIF. East San Bernardino Co. Water Dist., 7337 Del Rosa Ave., San Bernardino, Calif. Bids Jan. 27, awarded Jan. 30. CD 1/30, under LB.

BUILDINGS—LB & CA

▲ **Howard Constr. Co.**, 3755 S. 11 E., Salt Lake City, Utah. LB **$1,699,000**, est. $1,500,000 HIGH SCHOOL, Pleasant Grove, AMERICAN FORK, UTAH. Alpine School Dist., Frank Jex, dir., American Fork, Utah. Bids Feb. 3. CD 10/17.

David H. Murdock Development Co., 3424 N. Central, Phoenix, Ariz. Owner Builds. **$400,000**, 2 story MEDICAL BLDG., 240 West Osborn, PHOENIX, ARIZ. Charles G. Polacek, 3424 North Central, Phoenix, Ariz., archt.

Del E. Webb Constr. Co., S 23rd Ave., Phoenix, Ariz., Owner Builds, **$750,000**, 37 HOUSES at "Camelvista" subdivision, Lafayette, SCOTTDALE, ARIZ.

▲ **Marjar Constr. Co.**, 1850 West Broadway, Anaheim, Calif., CA **$1,075,850**, 76 frame, stucco DWELLINGS, Tr. 2369, ANAHEIM, CALIF. Clover Estates, 1850 W. Broadway, Anaheim, Calif. Awarded Feb. 4.

McNeil Constr. Co., 5858 Wilshire Blvd., Los Angeles, Calif., CA **$950,000**, 44,000 sq. ft. OFFICE, Lot 16-21, Tr. 10599, 9111 Wilshire Blvd., BEVERLY HILLS, CALIF. Gibraiter Savings & Loan Assn., 122 S. Beverly Dr., Beverly Hills, Calif. Perlera & Luckman, 9220 Sunset Blvd., Los Angeles, Calif., archts.

▲ **Secrest & Fish**, 1909 W. Whittier Blvd., Whittier, Calif., CA **$1,260,845**, 3 story, 60x241 ft., rein.-con. Life SCIENCE and BIOLOGY BLDG., CLAREMONT, CALIF. Pomona College, Summer Hall, Claremont, Calif. Smith, Powell & Morgridge, 208 W. 8th St., Los Angeles, Calif., archts. Bids Dec. 20. CD 12/20.

▲ **Laramore Constr. Co.**, c/o owner, Whittier, Calif. CA **$1,904,900** 151 frame, stucco DWELLINGS, Tr. 3214 GARDEN GROVE, CALIF. Empire Homes, Inc., 1111 Beverly Blvd., Whittier, Calif.

J. A. McNeil Co., Inc., 3115 Mission Rd., Alhambra, Calif., LB **$683,000**, est. $600,000 (5 bidders) 3 story, Type 1, rein.-con. 2 wings addn. to Hawthorne HOSPITAL, HAWTHORNE, CALIF. Bd. Directors, Hawthorne Community Hospital Corp., 711 N. Grevilla Ave., Hawthorne, Calif. Bids Jan. 28. CD 9/24.

Southwood Constr. Co., 2918 W. Compton Ave., Gardena, Calif., CA **$578,100**, 1,268 sq. ft., frame, stucco, 47 DWELLINGS, Stanbrook Dr., Mottley Dr., Ashgrove Dr., Lofthill Dr., Tolbot Ct., LA MIRADA, CALIF. Wilco Dev. Co., Rama Homes, Zola Homes, Overton Homes, 2918 W. Compton Blvd., Gardena, Calif.

P & A Constr. Co., 4565 Santa Monica Blvd., Los Angeles, Calif., LB **$499,528**, 140x164 ft., rein.-con. AUDITORIUM at Francis Polytechnic High School, 12431 Roscoe Blvd., Sun Valley, LOS ANGELES, CALIF.. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Austin, Field & Fry, 2311 W. 3rd St., Los Angeles, Calif., archts. Bids Jan. 31. CD 1/17.

▲ **F. E. Young**, 2141 Main St., San Diego, Calif., and **Twaits Whittenberg Co.**, 507 S. Dixel St., Los Angeles, Calif. (joint venture) LB **$2,988,000** (6 bidders) 10 story, reinforced brick and concrete Clarence Dyskra RESIDENCE HALL, UCLA Campus, LOS ANGELES, CALIF. University of California, Admin. Bldg., 405 Hilgard St., Los Angeles, Calif. Bids Feb. 4. CD 1/15.

▲ **Calbro, Inc.**, P. O. Box 390, Montebello, Calif., CA **$1,185,000**, 1070 sq. ft. frame, stucco, 98 DWELLINGS, E. Platama, S. Longleaf, E. Gazley, Ederton S. Graff, NORWALK, CALIF. Calbro-Harcur, Box 390, Montebello, Calif.

▲ **Calbro, Inc.**, P. O. Box 390, Montebello, Calif., CA **$1,404,600**, 1,314 sq. ft. frame, stucco, 117 DWELLINGS, S. Burgess Ave., Colima Rd., S. Stanhill Dr., S. Corley Dr., E. Plantana Dr., E. Leisure Dr., S. Marlette Dr., E. Adoree St., NORWALK, CALIF. Harcur-Calbro & Harcur-Diverfield. P. O. Box 390, Montebello, Calif.

H. & L. Homes, Inc., 7305 Beagle St., San Diego, Calif. Owner Builds. **$531,580**, 46 frame, stucco DWELLINGS on Salazar, Tiara, Armstrong Sts., Vista Mesa Tract No. 2, SAN DIEGO, CALIF.

Pueblo Constr. Co., 120 El Camino Dr., Beverly Hills, Calif. Owner Builds. **$566,600**, 52 frame, stucco DWELLINGS, Mt. Everest Blvd., etc., east of Clairmont Tract No. 2, SAN DIEGO, CALIF.

▲ **James I. Barnes Constr. Co.**, 1119 Montana St., Santa Monica, Calif., LB **$1,148,700** (3 bidders) constr. SCIENCE UNIT No. 2, University of California, Goleta Campus, SANTA BARBARA, CALIF. University of California, Goleta Campus, Goleta, Santa Barbara, Calif. Bids Feb. 6. CD 1/17.

CANADA

BUILDINGS—BA

Que., Montreal—PUBLIC LIBRARY—BA 2/26—Fraser-Hickson Institute, 637 Dorchester St. W., 2 story, bsmnt., 200 ft. wide, irregular depth, frame, brick, and stone walls, Public Library, rein.-con. fdns. Sumerled and Kinsington Aves. $500,000. Durnford, Bolton, Chadwick & Ellwood, 4101 Sherbrooke St. W., archts. CD 6/24.

BUILDINGS—LB & CA

▲ **Frank Spencer-Lewin Co. Ltd.**, Route 11, Piedmont, Que. Owner Builds. **$1,300,000**, HOUSING, ST. SAUVEUR, QUE.

FOREIGN

BUILDINGS—BA

▲ **Jordan**—REFINERY — Bids Asked — Jordanian Petroleum Refinery Co. Ltd., Amman, Jordan, refinery near Zerka. $9,000,000. Comprimo N. V., Amsterdam, Holland, engr. CD 12/16.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **O., Cleveland**—City, Dpt. P. Service, Louis L. Drasler, Dir., City Hall, Zone 14, sewer imprvt. program for 1958: 20 major flood relief projects, **$2,500,000**; low level sewers to reduce lake and river pollution, **$400,000**; sewers in new residential areas, **$200,000**; and misc. projects, **$400,000**; reconstr. Bellaire Rd. Relief Sewer from W. 130 St. towards Big Creek, part of 1958 sewer program, **$500,000**. CD 11/7/52; large trunk sewer in E. 131 St., towards Garfield Heights, part of 1958 sewer program, **$500,000**. Jay R. Katz, city engr.

▲ **Que., Shawinigan South**—Municipality of South Shawinigan, City Hall, sewage system. **$1,000,000.**

BRIDGES

▲ **NEW YORK and VERMONT**—Lake Champlain Bridge Comn., Burlington, Vt., bridge over Lake Champlain alternate sites Grand Isle, Vt. to Cumberland Head, N. Y. or Point due Roche, N. Y. to Isle LaMotte and North Hero, Vt. **$10,000,000**. Sprague & Henwood, consult. engrs., 221 W. Olive, Scranton, Pa. will make test borings.

STREETS AND ROADS

▲ **Tex., Liberty**—Liberty County, c/o Courthouse, voted bonds Jan. 25, Prec. 1 road work. **$1,200,000**; Prec. 2 road work, **$8,000,000**; Prec. 3, road work **$1,200,000**; Prec. 4, road work, **$800,000**. CD 11/28/56.

(Continued on page 92)

For FIRST SECURITY . . . The security of *steel pipe* heating *and* cooling!

Salt Lake City's new First Security Building is ultra-modern in more than just appearance. It features dual zone air conditioning in which *steel pipe* serves for the steam, chilled water and condenser water lines throughout the 12-floor *heating and cooling* system. Nearly a mile of steel pipe—40,000 pounds— from the basement boiler and chiller installation to the penthouse condensers was required.

Steel pipe is first choice for wet heating . . . proved in almost 70 years of hot water and steam heating applications. Its extended use in modern dual systems for *cooling* as well as heating results, logically, from that acknowledged superiority.

Yes, for heating and cooling, snow melting, fire sprinkler systems, plumbing, power, steam and air lines, irrigation, and structural purposes, it is the most widely used pipe in the world!

Only Steel Pipe gives all these advantages!

- Low cost with durability
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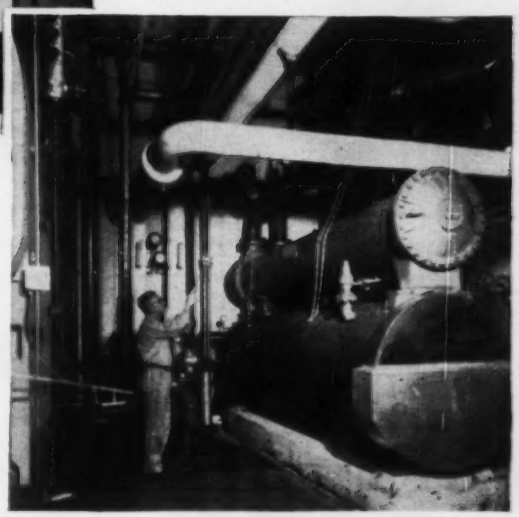
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock



Steam boiler and water chiller equipment for the dual zone air conditioner are compactly housed among this maze of steel piping.

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Committee on
STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
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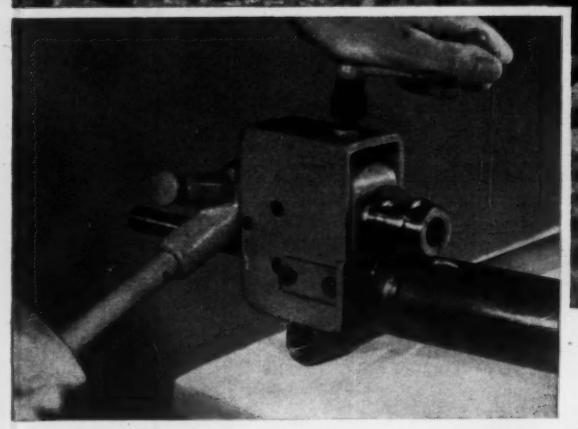
Victaulic Couplings and Republic



This oil well flow line to the tank battery is a typical Republic ELECTRUNITE Light Wall Grooved-End Tubing and Victaulic Coupling application. The Victaulic "Vic-Easy" portable grooving tool, left, weighs only ten pounds, can be operated manually or with power drive for the in-the-field adjustments.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

ELECTRUNITE Grooved-End Tubing

...go hand-in-hand to serve your piping system needs

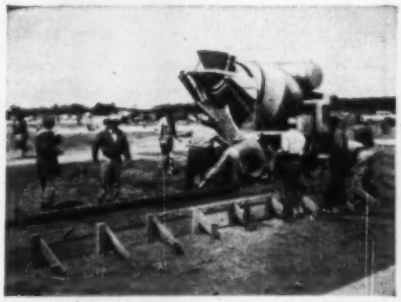
Save installation time . . . reduce operating costs with Republic ELECTRUNITE® Light Wall Grooved-End Tubing and Victaulic "Vic-Easy" method of coupling. This combination offers new operating efficiencies and maximum economies in temporary, semi-permanent and permanent piping system installations. Victaulic Couplings are produced by Victaulic Company of America, Elizabeth, New Jersey.

Republic ELECTRUNITE Grooved-End Tubing is designed and produced to meet severe requirements and laying conditions of road building contractors, the mining, petroleum, construction, tank truck and processing industries. Light Wall is lightweight—as much as one-third lighter than conventional steel pipe, and it is steel—strong, sturdy.

Republic ELECTRUNITE Grooved-End Tubing is produced with a consistent wall thickness at the grooved section . . . no weak spots in the system. Mechanical strength is maintained throughout the line and working pressures are adequate for movement of air and most liquids.

Joining is quick and easy—no threads to cut, no runs to turn. Simply use any of a variety of Victaulic Couplings and fittings—Snap-Joint couplings for lightweight and temporary applications; Bolt-Type for heavy duty and permanent installations. And Republic's Grooved-End Tubing can be used—then easily re-laid as the job moves ahead. When work is complete, simply dismantle and move to new job site. Because joining is simple and tubing is portable—maintenance is easy.

For additional information, send coupon or write today! It is available in sizes up to 4½" O.D. and wall thicknesses from .085" to .156". Available with a normal mill protective coating or with a protective hard drying oil. Also available in stainless steel.



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NEW TRUSCON STEEL "BUDGET BUILDINGS" offer top utility at low, low cost! Available for immediate delivery in widths of 32, 36, 40, 44, and 48 feet . . . 12 and 14-foot heights . . . lengths as long as you want to make them. All elements are engineered for fast on-the-site erection. Roofing and siding are rust-resistant galvanized steel. No painting required. For additional information, write today!

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Please send additional information as soon as possible:
☐ Republic ELECTRUNITE Grooved-End Tubing
☐ Truscon Curb Bars—Welded Wire Fabric
☐ Truscon Reinforcing Bars ☐ Truscon Budget Buildings

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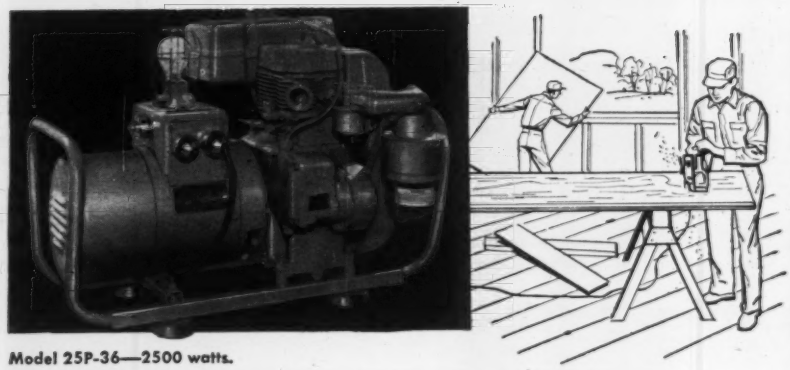

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F-M generators are used also for emergency lighting, radio telephones, microwave communication systems, camp lighting systems and heating plants.

The popular Model 25P-36 shown here is available in five capacities—from 600 to 2500 watts. Mobile units, skid or wheel-mounted, range in capacities from 3.5 to 10 kw., 115 to 230/380 volts, A.C. For complete details, write Fairbanks, Morse & Co., Chicago 5, Illinois.

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(Continued from page 88)

AIRPORTS

▲† **La., Alexandria**—DORMITORIES, etc.—U. S. Eng., 300 Broadway, Little Rock, Ark., plans by Barron, Heinberg & Brocato, 1015 Wisteria St., 4 dormitories, 4 squadron headquarters and mess hall, England Air Force Base, $2,500,000. Pan-American Engineers, 1022-10 St., heating and structural engrs. CD 9/17.

▲ **Ont., Windsor** — HANGAR, etc. — Dpt. Transport, Hunter Bldg., exten. north-south runway from 5,200 ft. and northeast-southwest runway from 5,000 ft., both to 7,500 ft.; new hangar, Windsor Airport. $1,500,000. CD 5/25/43.

LATIN AMERICA

▲ **Brazil, Sao Paulo**—MILL—Champion Paper & Fibre Co. & Assoc. c/o Wm. R. Crute, Pasadena, Tex., U. S. A., plans integrated bleached Kraft Pulping Mill, Mogi Gaucu, Over $1,000,000

FOREIGN

▲ **Greece**—Govt. Greece, Information & Communications, Athens, plans television transmitter station, Mount Parnex near Athens $5,000,000. Will ask international bids.

PUBLIC BUILDINGS

▲ **Calif., Artesia**—CLASSROOM ADDNS., etc.—Cerritos Junior College Dist., 17923 S. Pioneer Blvd., Artesia, plans by Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, Increment No. 2 classroom addns. lecture hall, shower and locker unit and classrooms, $1,500,000; electronics shop technology and industry unit humanities bldg. $1,100,000, at Cerritos Junior College. CD 3/26/56, under Excelsior Junior College Dist. as owner.

▲ **Calif., Carmichael**—SCHOOL—Arden-Carmichael School Dist., Sutter and California Aves., $1,500,000 bond election May 20. Schools. CD 9/23.

▲ **Conn., Enfield**—SCHOOL—Town, Town Hall, plans by Olson & Miller, 742 Asylum Ave., Hartford, high school. $3,000,000. John P. Legnos, 30 Gillett St., Hartford, consult. engr. A. John Macchi, 57 Farmington Ave., Hartford, owners, staff engr. Charles A. Currier & Assocs., 734 N. Main, West Hartford, site-planner. CD 12/19.

▲ **Conn., Groton**—HOUSING—Town of Groton, Town Hall, Poquonnock Bridge, Conn., 100 unit moderate rental housing. $1,375,000.

▲ **Conn., West Hartford**—SCHOOL—Town, Town Hall, plans by Warren H. Ashley, 731 Asylum Ave., Hartford, North End High School, south of Wampanoag Country Club, west of North Miami St. $5,000,000. Charles A. Currier & Assocs., 967 Farmington Ave., consult. engrs. Engelhardt, Engelhardt, Leggett & Cornell, 221 W. 57th St., New York, N. Y., educational consultant. CD 10/10/56.

▲ **Conn., Winsted**—HOUSING—Winsted Housing Auth., 338 Main St., plans by Seb J. Passanesi, 164 Court St., Middletown, 30 unit Low Rental Housing. $1,000,000. CD 12/30.

▲ **Del., Dover**—COLLEGE—Delaware State College, Campus, Dover, plans by W. Ellis Preston, 903 Jefferson St., Wilmington, four bldgs., $1,225,000. Bids about Mar. 1. CD 3/11/46.

▲† **D. C., Wash.**,—ARMY MEDICAL CENTER IMPRVS. —U. S. Eng., 1st and Douglas Sts. N.W., Zone 25, air-conditioning hospital, 36 Bldgs., Walter Reed Army Medical Center. $3,000,000-$5,000,000. William A. Brown, 1223 Connecticut Ave. N.W., consult. engrs; sub-station and electrical distr. system, Walter Reed Army Medical Center, $1,000,000-$3,000,000. C. Warren Bogan & Assocs., 1204 Wisconsin Ave. N.W., consult. engrs. CD 8/3/56.

▲ **Mass., Bridgewater**—DORMITORY, etc.—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Richmond & Goldberg, 16 Arlington St., Boston, Mass., E-58-dormitory and imprvs. for State Teachers College. $1,310,000. CD 5/1/53.

▲ **Minn., Brainerd**—HOSPITAL—State, Dpt. Admin., Director Procurement, 19 State Capitol, St. Paul, plans by Toltz, King, Duvall, Anderson & Assocs., 1509 Pioneer Bldg., St. Paul, 1 story patients' bldg., two-2 story work patients bldgs. and 2 story, bsmnt. service bldg. $5,500,000. Bids in about 30 days.

▲ **Minn., Mound**—SCHOOL—Bd. Educ., Independent School Dist. No. 277, A. F. Gallestal, clk., voted $1,550,000 bonds Jan. 28, Junior High School. $1,300,000. Thorshov & Cerny, Inc., 400 Metropolitan Bldg., Minneapolis, archt. CD 12/20.

▲ **N. J., Hackensack**—SCHOOL—Bd. Educ., constr. Central Junior High School, Beech and Second Sts. and Morningside Place. $2,200,000.

▲ **N. M., Albuquerque**—SCHOOLS—Bd. Educ., 724 Maple St., bond election Feb. 25, school addns., $500,000; elementary schools, $1,268,170; Junior High School No. 1, in N.E. Albuquerque, Hoffmantown, $1,000,000; Junior High School No. 2, in N.E. Albuquerque, Hoffmantown, $750,000. CD 3/26/56.

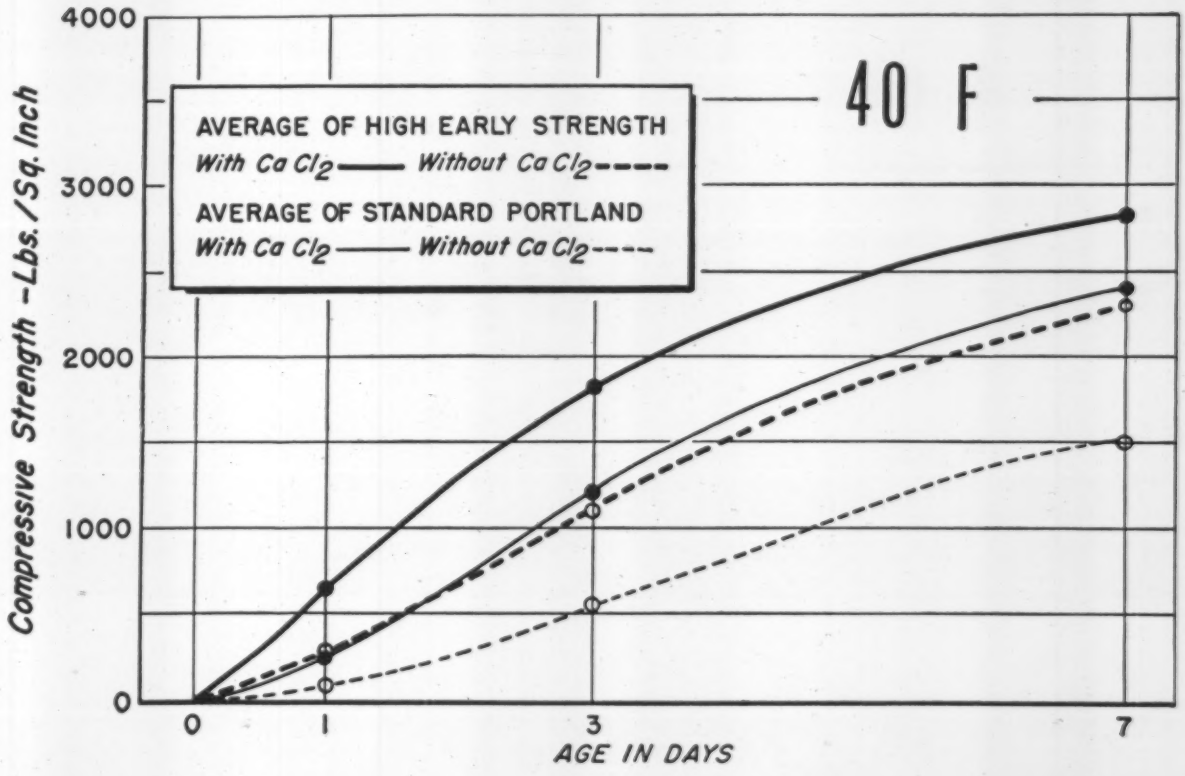
▲ **N. Y., Cheektowaga**—SCHOOL—Central School Dist. No. 1, 1635 E. Delavan Ave., voted $3,600,000 bonds Jan. 29, high school. CD 1/17.

▲ **Pa., Easton**—SCHOOL—Easton Area Jt. School Dist., Monroe and Reeder Sts., secondary school bldg. $4,300,000.

(Continued on page 94)

NO WINTER SLOW-DOWN HERE

COLUMBIA CALCIUM CHLORIDE gives high early strength days faster



Low winter temperatures shouldn't put a chill on your concrete schedules. Pours can go smoothly, set time be shortened safely, finishing done without delay or overtime. How come? Columbia Calcium Chloride comes . . . right in the ready mix.

The American Concrete Institute now recommends the addition of calcium chloride for cold weather concreting. (ACI Standard "Recommended Practice for Winter Concreting.") These benefits have been proved, on jobsite after jobsite: initial and final set achieved up to three times faster, quicker early strength, greater ultimate strength. Finishing goes faster, forms can be pulled days earlier, contractor profit increases.

Let our Columbia Calcium Chloride engineers help you save money on your concrete work this season. For their assistance, just write today to Calcium Chloride Department at our Pittsburgh address, or to any of our fourteen conveniently located District Sales Offices.

Columbia Calcium Chloride is available in both High Test Flake (94-97% $CaCl_2$ content) and Regular Flake (77-80% $CaCl_2$). One 80 lb. bag of High Test delivers the same results as one 100 lb. bag of Regular. Both add easily at suppliers' plants or right at the jobsite.

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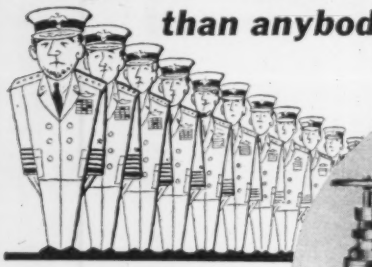

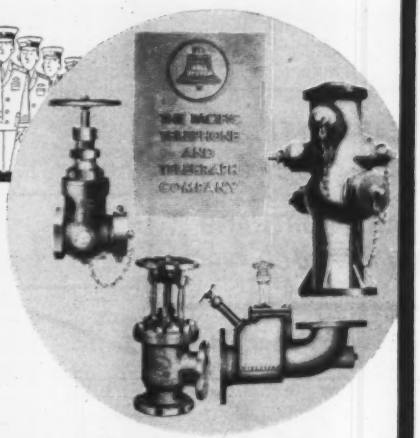

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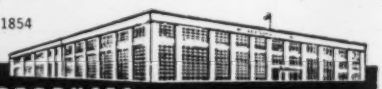

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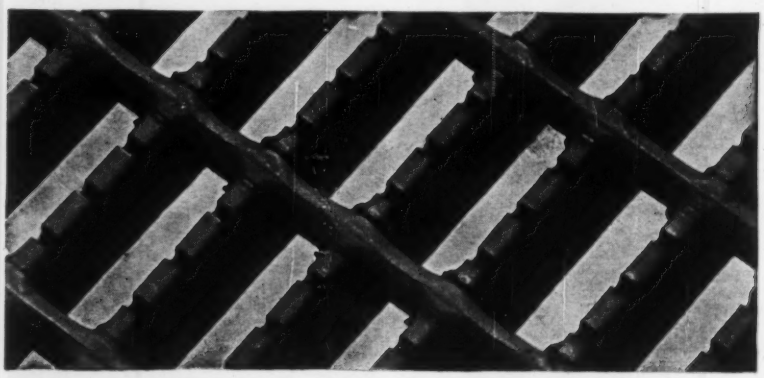

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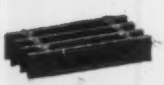

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GARY GRATING DIVISION

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(Continued from page 92)

▲ **Pa., Phila.**—SCHOOL—Bd. Educ., 21st and Winter Sts., plans by Savery, Scheetz & Gilmour, 1500 Walnut St., elementary school, 49th and Parrish Sts. $1,300,000. Schulcz & Padlasky, 1430 Spruce St., consult. engrs. CD 12/2.

▲ **Texas., Austin**—STATE HEADQUARTERS—Texas Employment Comn., 300 W. 6th St., plans by Geo. L. Dahl, 2101 N. St. Paul, Dallas, Pitts, Mebrane & Phelps, 1872 Caldwell, Beaumont, and John Linn Scott, 406 W. 17, Austin, 5 story, 160,000 sq. ft. semi-fireproof State Headquarters Bldg., $2,600,000. CD 6/14.

▲ **Wash., Bellevue**—SCHOOL—School Bd., election Mar. 11 on special levy to raise $407,000, high school. $1,722,843. CD 9/18.

▲ **Wis., South Milwaukee**—SCHOOL—Bd. Educ., South Milwaukee, plans by E. A. Stubenrauch & Assocs., 712 Erie Ave., Sheboygan, Senior High School. $3,120,870. CD 11/12/47.

▲ **Ont., London**—RESIDENCE—Bd. Governors, University Western Ontario, Admin. Bldg., plans by O. Roy Moore Assocs., 260 Dundas St., London, Ont., 4 story, bsmnt., 170 X 245 ft., rein.-con., stone, residence. $1,000,000. C. D. Carruthers & Wallace Consultants Ltd., 92 Yorkville Ave., Toronto, consult. engrs. CD 10/24/43.

COMMERCIAL BUILDINGS

▲ **Ark., Pine Bluff**—RESIDENCES, etc.—Broadmoor Development Corp. of Pine Bluff. A. S. Hill, pres., Blytheville, developing 180 acres east of Ohio and north of Hy. 65, incl. 500 residences and shopping center on 20 acres. $5,000,000.

▲ **Calif., San Bernardino**—HOSPITAL—St. Bernardino's Hospital plans by I. E. Loveless, 102 S. Robertson Blvd., Beverly Hills, 6 story, full bsmnt., 57,785 sq. ft. rein.-con. addn. to St. Bernardino's Hospital. $1,000,000.

▲ **Calif., San Jose**—SHOPPING CENTER—Westlake Shopping Center, Morris Stulsaft, pres., c/o John I. Balles, archt., Pier 5, San Francisco, 500,000 sq. ft. shopping center on 44 acre site, 4,000 car parking area. $10,000,000.

▲ **Conn., New Haven** — HOSPITAL — Grace-New Haven Community Hospital, 789 Howard Ave., 3 story addn. Nurses' Training Bldg., Park St. $1,000,000. CD 6/14/45.

▲ **D. C., Wash.**—OFFICE, etc.—Labor-Cooperative Education & Publishing Society, 401 3rd St. N.W., plans by William N. Denton, 1300 Connecticut Ave., N.W., 8 story, stone concrete brick office and commercial bldg., 400 First St. N.W. $1,500,000.

▲ **Ga., Atlanta** — MOTOR HOTEL — United Enterprises, Inc., Dermon, Memphis, Tenn., Holiday Inn Motor Hotel, $1,000,000.

▲ **Mass., Cambridge**—HEALTH CENTER, etc.—Harvard University & Radcliffe College, c/o Planning Coordinator, Cambridge St., plans by Jose Luis Sert, 4 Brattle St., 10 story Harvard-Radcliffe Health Center, etc., Plympton-Mt. Auburn and Dunster Sts. $10,000,000. CD 2/21, under Harvard University, as owner.

▲ **Minn., St. Paul**—SCHOOL—Our Lady of Peace High School, Sisters of Charity, 880 Portland Ave., plans by Ellerbe & Co., E. 505 First Natl. Bank Bldg., high school wing, Summit Ave. and Victoria St. $1,500,000. Bids this spring. CD 10/10/56.

▲ **Mo., Grandview**—HOUSING, etc.—Triangle Investment Co., F. Weinberg, pres., 12 and Walnut St. Bldg., Kansas City, Mo., housing development, shopping center, Truman Village, U.S. 71. Over $2,000,000.

▲ **Mo., Kansas City**—MOTEL—Doctor's Motel, Inc., J. M. Offil, pres., 254 New Brotherwood Bldg., Kansas City, Mo., luxury motel, at Jct. US 69 Freeway 169 and Freeway 71. $1,000,000.

▲ **N. J., Bridgeton**—SHOPPING CENTER—Joseph Bradway, 3542 Atlantic Ave., Atlantic City, 35 store shopping center, on 300,000 sq. ft. site. $3,000,000. Constr. in summer.

▲ **N. J., East Orange**—APARTMENT—David Aranow, 833 Chamberlain Ave., Perth Amboy, plans by Irwin Gerber & A. Pancani, 11 Commerce St., Newark, 140 unit 82,000 sq. ft. apartment, 44 South Munn Ave. $1,200,000.

▲ **N. J., Lakewood**—HOSPITAL—Paul Kimball Hospital, River Ave., plans by Ferrenz & Taylor, 1451 Broadway, New York, N. Y., hospital addn. $1,000,000. Bids soon. Throop & Feiden, 150 E. 13 St., New York, N. Y., consult. engrs. CD 3/29/56.

▲ **N. J., Newark**—OFFICE—David Cronheim, 39 Branford Place, 20 story, 200,000 sq. ft. office bldg., Broad and Clinton Sts. $6,000,000. Henry Boyer, 39 Branford Place, archt. CD 9/23.

▲ **N. Y., New York**—APARTMENT—Niemad 65 Corp., Maurice Epstein, pres., 9 E. 40 St., Zone 17, 16 story apartment, 751½ to 755 Madison Ave. and 27-31 E. 65 St. northeast corner Madison Ave. and 65 St. $1,500,000.

▲ **Okla., Tulsa**—OFFICE—Gulf Oil Corp., Gulf Bldg., office bldg. $1,000,000.

▲ **Tex., Amarillo**—HOSPITAL—St. Anthony's Hospital, 707 N. Polk St., plans by John L. Hannon, Amarillo Bldg., Amarillo, and Bill O'Connell, 504 W. 7th St., Austin, hospital. $1,800,000-$2,000,000. CD 5/23.

▲ **Tex., Dallas**—APARTMENT, OFFICE, etc.—J. Curtis Sanford, 1712 Cedar Springs, luxury apartment, office, 20 story, bsmnt., ground floor for stores, next 9 floors

for offices, and upper 10 floors for luxury type apartment topped with roof garden, swimming pool, playgrounds, N. Arkrard, between Ross and Main Sts., $11,500,000; with parking garage, same location, $500,000.

▲ **Tex., Galveston**—CHURCH—First Methodist Church, 1902 Sealy St., church. $2,500,000.

▲ **Tex., Midland**—SHOPPING CENTER—Delvin, Inc., 150,000 sq. ft. masonry shopping center, 26-acre tract $1,500,000.

▲ **Wis., Milwaukee** — HOTEL AND OFFICE — George Bockl, 2040 W. Wisconsin Ave., 200,000 sq. ft. each hotel and office bldg. $8,000,000.

▲ **Newfoundland, Corner Brook**—RAILWAY TERMINAL—Canadian National Railways, D. W. Blair, regional ch. engr., Moncton, N. B., railway terminal. $1,500,000.

▲ **Ont., London**—SHOPPING CENTER, Webb & Knapp Realty Co., 383 Madison Ave., New York, N. Y., U.S.A., shopping center, York, King, Wellington and Clarence Sts. $10,000,000.

▲ **Ont., Richmond Hill**—HOUSING—Skopit Assocs. Co. Ltd., 4869 Yonge St., Toronto, 274 low cost brick housing development, Elgin Mills Rd., $4,000,000.

▲ **Que., Montreal**—PSYCHOLOGY CENTER—Le Centre de Psychologie et de Penagogie de Montreal, 8225 Blvd. St. Laurent, plans by Victor Depocas, 1546 McGregor St., constr. Centre of Psychology, Metropolitan Blvd. $1,500,000.

▲ **Que., Pointe Gatineau**—HOUSING—Les Syndicats Nationaux d'Ottawa, 175 Eddy St., housing program on newly sub-divided lots off Route 8 $10,000,000.

INDUSTRIAL BUILDINGS

▲ **Del., Newark**—PLANT—Parade Publications, Inc., 285 Madison Ave., New York, N.Y., plans by Whiteside, Moeckel & Carbonell, 909 Tatternell Rd., Wilmington, printing plant, $1,000,000. Louis H. Doane, Penna R.R. Bldg., Wilmington, consult engr.

▲ **Ill., Chicago**—FACTORY—National Container Corp. 403 W. Westwood, Toledo, O., plans by Skidmore, Owings & Merrill, 37 S. Wabash Ave., 1 story 230,000 sq. ft., brick factory, bounded by 138th St., Little Calumet River and Chicago & Western Ind. R.R. $2,300,000.

▲ **La., New Orleans**—PLANT—Tennessee Gas Corp., Commerce Bldg. and Texas Natural Gasoline Corp., Bank of Southwest Bldg., Houston, Tex., natural gasoline plant, capacity 150 m. cu. ft. gas and process 385,000 gal. liquids daily, south of here. $5,500,000.

▲ **La., Shreveport**—POWER PLANT—Southwestern Gas & Electric Co., 428 Travis St., 100,000 kw. addn. at Arsenal Hill Power Plant. $10,000,000. Work to start in summer.

▲ **Mich., Grand Rapids**—PLANT—Bissell Carpet Sweeper Co., 210 Erie N.W., plant to contain complete operations. $2,000,000.

▲ **Miss., Jonesboro**—PLANT—Henderson Sugar Refinery, Inc., 749 South Peters St., New Orleans, sugar refinery, Bayou Cassotte Harbor area, near here. $8,000,000. Truman B. Wayne & Assocs., P.O. Box 13086, Houston 19, Tex., engrs. CD 2/6, under La., Jonesboro.

▲ **Mo., Flat River**—ROTARY KILN EXPANSION—Valley Dolomite Corp., Henry P. Day, vice pres. and treas., 915 Olive St., St. Louis, Zone 1, expansion of rotary kiln, modernization of existing plant, new office bldg. and 2,200 lin. ft. railroad spur, etc. $1,000,000.

▲ **Ore., Lakeview**—MILL—Lakeview Mining Co., Lakeview, uranium mill, near here. $2,500,000. Galigher Co., 525 W. 8th St., South, Salt Lake City, Utah, consult. engr.

▲ **Tenn., Kingsport**—PLANT—Tennessee Eastman Co., Div. Eastman Kodak Co., plant to manufacture plastic fibres and industrial chemicals. $22,000,000.

UNCLASSIFIED

▲ **Calif., Long Beach**—PIERS, etc.—Port of Long Beach, 1333 Embarcadero, P. O. Box 570, Zone 1.
1958 Program
PIER A
Berths 1-2, transit shed raising $970,000; wharf raising $860,000; back area raising $243,000;
Berths 6-7, transit shed and wharf remedial $194,000; office bldg. $550,000 Windham Ave. imprvs. $114,000.
PIER B
Berths 12-13 transit shed and services $2,711,000
PIER D
Berths 27-31A, cathodic protection $95,000
Berth 31, Gantry crane power facilities $65,000
PIER E
Berths 118-119, Oil Terminal Dredging $855,000
PIER F
rock work and fill $1,976,000
PIER G
rock work and fill $2,972,000
PIER 2
Berth 55, bulkhead and back area raising $111,000
Berths 52-55 corrosion mitigation $53,000
ROADS AND STREETS
Pico Ave.-Long Beach Freeway $926,000
1958-1963 PROGRAM
PIER A
Berths 1-2 back area raising $417,000
Berths 3-4 transit shed raising $1,168,000
wharf raising $657,000; back area raising $567,000
Berth 5, transit shed raising $860,000
wharf raising $310,000; back area raising $700,000
Berths 6-7; transit shed raising $1,400,000

(Continued on page 97)

TRIBUNE FINAL
DAY, JANUARY [illegible], 1955—56 PAGES
Closing New York Stock Prices Page 8C
PRICE 5 CENTS
LARGE LOSS FIRE DAMAGE HIGHEST IN HISTORY
National Board of Fire Underwriters Blame Structural Deficiencies For Staggering Increase

Large fire losses are the highest ever, with a resulting toll of suffering and dollars, according to the National Board of Fire Underwriters. Experts blame lack of effective fire stop materials and partitions in structures as a serious contributing factor. Give your property the *extra proven protection* of wire glass. Mississippi Wire Glass, approved Fire Retardant #32, tends to bottle up fire . . . helps prevent it from roaring into a costly conflagration. For positive protection that no glass substitute can offer, insist on Mississippi Wire Glass—the original upon which the Underwriters standard was based in 1899—the standard today by which all others are judged.

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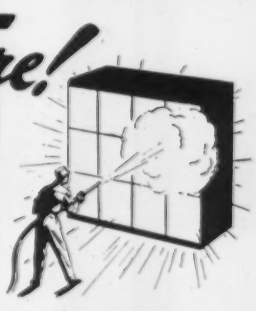
In this dramatic Underwriters Laboratory test, the glass is first subjected to temperatures ranging up to 1600° F., and later to a ¾" stream from a fire hose at 35 to 40 lbs. pressure. Passing the test requires that glass remain in sash, unchanged except for cracking due to thermal shock.



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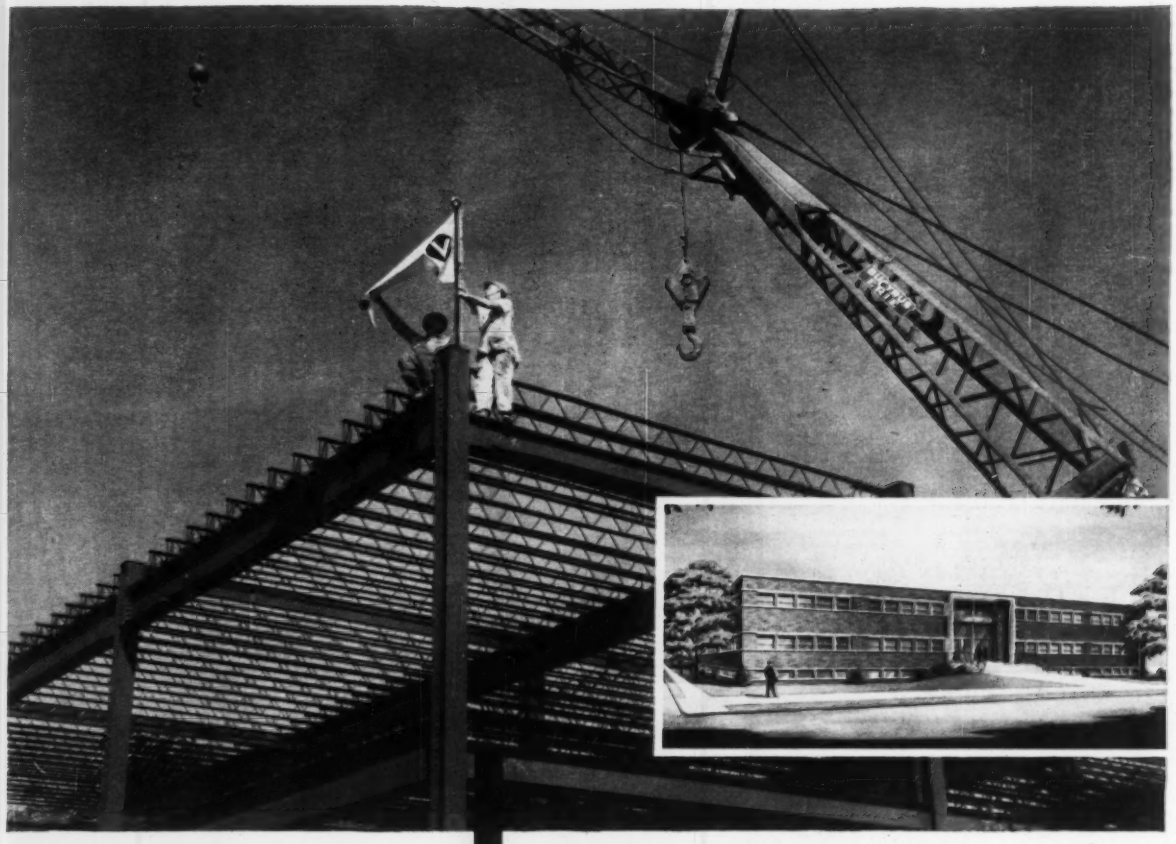


LIGHTWEIGHT PRE-DIMENSIONED LACLEDE STEEL JOISTS SPEED CONSTRUCTION

Owner: ST. LOUIS SHIPBUILDING & STEEL COMPANY
General Contractor: Vollmar Bros. Construction Company
St. Louis, Missouri

Hoisting of contractor's jack marks pre-schedule completion of steel work

Set for completion early in 1958, this new office building for St. Louis Shipbuilding and Steel Company is ahead of construction schedule.

Strengthened by Laclede open web steel joists, this two-story steel framed building was erected quickly because shop fabricated joists, dimensioned to close tolerances, eliminated costly and time-consuming field fitting. Identified at the plant for proper location in this steel framed structure, these Laclede joists were delivered to the site ready for immediate placement.

The open web construction of Laclede steel joists insures strength, minimizes dead weight and makes them easy to handle and place. Laclede Steel Joists are designed and manufactured in strict conformity to the sound engineering standards adopted and approved by the Steel Joist Institute.

OTHER LACLEDE CONSTRUCTION STEELS ARE

multi-rib reinforcing bars
welded wire fabric
form and tie wire
spirals
corrugated steel centering
electrical weld gas tubing
conduit
steel pipe

LACLEDE®

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

(Continued from page 95)

Berths 6-8 wharf raising $640,000; back area raising $668,000
Berths 208-211—wharf $680,000 fill $266,000 transit sheds (2) $2,588,000; pavement $360,000; railroad $345,000 utilities $240,000
South Maine Ave. $150,000
Pierpont Imprv. $1,530,000
Panorama Drive $182,000
Berth 6, warehouse $413,000
Berth 11—restaurant and offices $180,000

BACK AREA PIERS A-D

area raising paving and lighting $256,000

PIER E

Berths 125-127, wharf $1,277,000; pavement $255,000; utilities $170,000
paving $84,000

PIER F

Berths 206-207, transit shed $1,552,000;
utilities $216,000; railroad $242,000; pavement $324,000; wharf $904,000

PIER G

Berths 212-215, transit shed (2) $2,241,000; utilities $234,000; railroad $303,000; pavement $351,000; wharf $1,275,000

ROADS AND STREETS

Pico Ave.-Long Beach Freeway $6,666,000
Santa Fe Imprvt. $79,000
Ninth St. Imprvt. $247,000
New Pico Ave. south of El Embarcadero, $550,000
Ocean Blvd $1,103,000
Seaside Blvd. $301,000
oil well raising $165,000
Seaside Blvd. $1,155,000

1963-1977 PROGRAM

PIER E

Berths 120, development $991,000
Berths 121-122, development $3,261,000
Berths 123-124, development $86,000
Berths 125-127, development $2,692,000
Central Area, $2,305,000

PIER F

dikes $1,036,000
fill $572,000
wharf $1,087,000
transit shed $776,000
pavement $199,000
utilities $133,000
railroad $119,000

PIER G

wharf $2,003,000
2 transit sheds $2,241,000
pavement $351,000
railroad $347,000
utilities $234,000

PIER H

wharves $3,763,000
transit sheds $4,482,000
pavement $795,000
railroad $703,000
utilities $531,000
gear shed $112,000
dike $2,425,000
fill $2,408,000

PIER J

fill $3,849,000
wharves $5,966,000
retaining walls $95,000
pavement $1,218,000
railroad $1,144,000
utilities $812,000
gear shed $112,000
dikes $2,812,000

CHANNEL 1 PROPERTY

channel dredging $775,000
transit sheds $4,997,000
pavement $1,064,000
railroad $608,000
utilities $709,000
wharves $6,359,000
gear sheds $224,000
restaurant $32,000

ROADS AND STREETS

Broadway-3 St. bridges $9,300,000
Water Street High Level Rd. $3,534,000
Terminal Island Interchange $1,121,000
Ocean Blvd. High Level Rd. $3,784,000
High Level Bridge $10,997,000
Long Beach Freeway south of El Embarcadero $2,716,000
South Maine Ave. Bridge $6,568,000
Town Lot Streets $800,000
Water St. $375,000

TOWN LOT AREA

Railroad loop $64,000
fill $2,016,000
paving $176,000
utilities $845,000
raising oil wells $390,000
tank farms $812,000
warehouses $1,400,000
service garage $126,000
railroad tracks $359,000. CD 2/14/56.

▲ Louisiana—PIPE LINE—American Louisiana Pipe Line Co., 666 Penobscot Bldg., Detroit, Mich., 7.39 mi. 16 in. and 4.86 mi. 12 in. pipe line from North Holly Beach Field and Second Bayou Field, Cameron Parish. $1,481,130. F.P.C. authorized.

▲ Louisiana—GAS TRANSMISSION LINES—United Gas Pipe Line Co., 1525 Fairfield Ave., Shreveport, 13 mi. 16 in. gas transmission line from Kent Bayou Field to Halter Island Field area, $1,485,750; 17.4 mi. 8 in. supply lines, meter stations, other facilities, $1,167,460; in Terrebonne Parish. F.P.C. authorized. CFD 2/4/52.

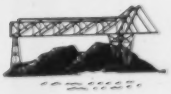
▲ Wash., Wenatchee—TELEPHONE FACILITIES—General Telephone Co. of the Northwest, Wenatchee, expansion of telephone facilities. $1,000,000.

BROWNHOIST bridge and crane BUCKETS

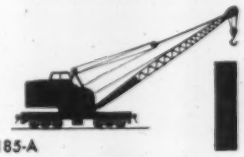
we have the type and size to best handle the job, dependent on material and equipment

Open-type grab buckets and link-type buckets for bridge cranes, fast-plant unloaders and large gantry cranes are available in capacities from 35 to 400 cubic feet.

Because of their simplicity of design and rugged construction, Brownhoist buckets (such as the link-type left or the open type grab bucket above) withstand extremely severe abuse. Abrasion-resistant alloy steel nose plates protect against coarse materials.



Brownhoist clamshell buckets (right) in capacities from ½ cu. yd. to 3 cu. yds. are used with cranes for handling coal, ore, sludge, slag, rock or wet clay. They're engineered (as a result of over 80 years experience) to take full bites, year after year with trouble-free operation. Write today for catalog.

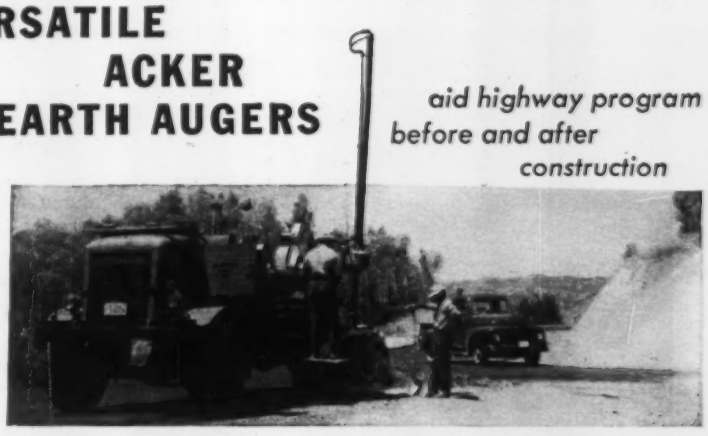


INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN

185-A

VERSATILE ACKER EARTH AUGERS

aid highway program before and after construction



The Acker AP Earth Auger is the highway construction man's most versatile friend.

BEFORE CONSTRUCTION, it "doubles-in-brass" with dependable, accurate soil sampling of sub-surface conditions. This it accomplishes with large diameter or continuous flight augers. For deeper sampling, the Acker Earth Auger speedily converts into a core drill for *inexpensive shot core* or diamond core drilling.

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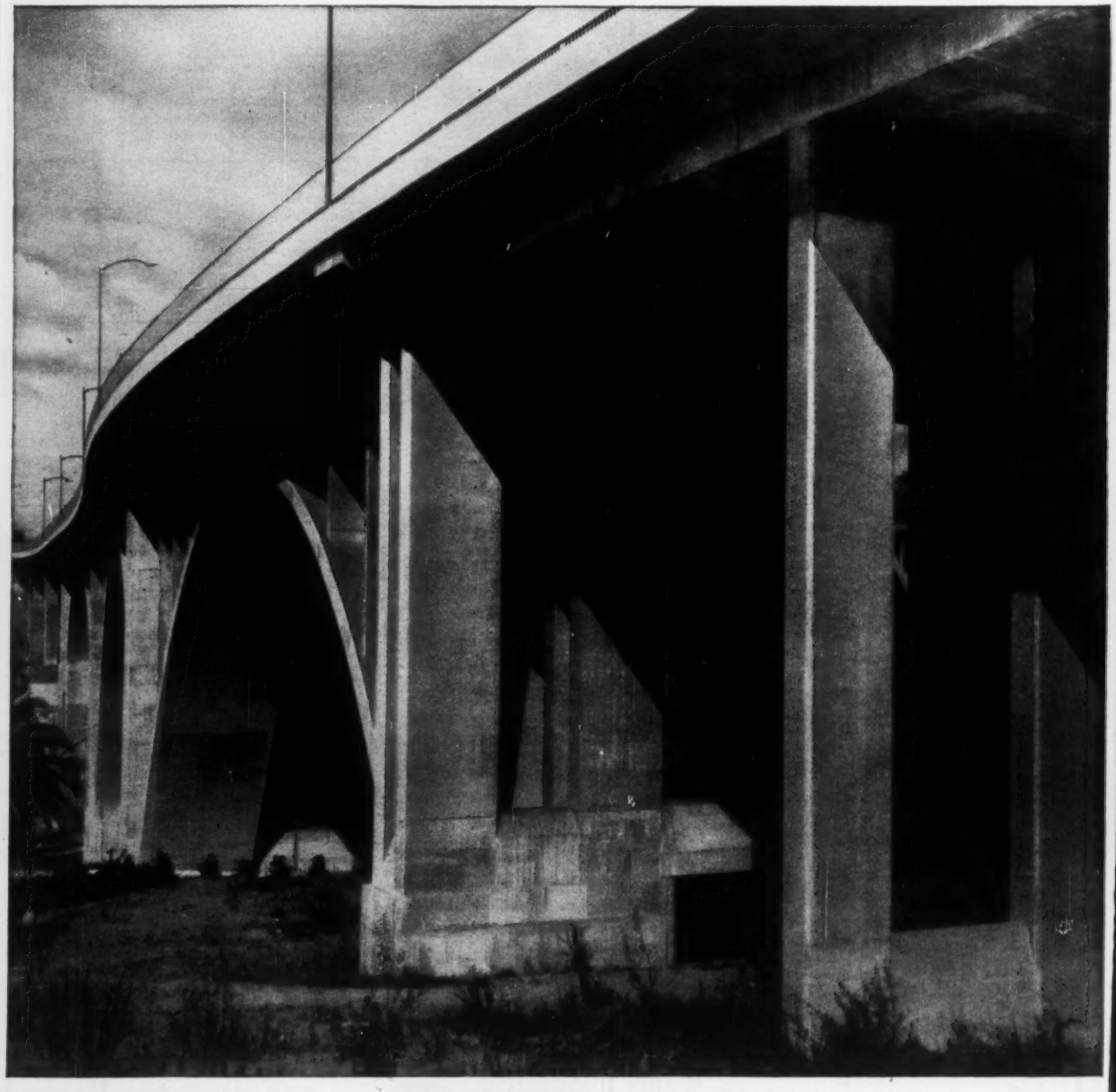
Pasadena freeway bridge demonstrates **Three**

# of fir plywood



Fir plywood forms cut costs and solve complex design problems on this Pasadena freeway bridge

key advantages concrete forms

1. design adaptability

On this 3.3 million dollar Colorado Street freeway bridge, Pasadena, California, fir plywood helped solve a complex form problem posed by the six giant arch ribs supporting the roadway. Forms were 5/8" fir plywood, specified because of its adaptability to built-up slip forms.

2. time and labor savings

Fir plywood also speeded construction time for huge built-up form sections used for scores of spandrel columns and main pier columns. Sections ranged from 5 to 80 feet in height. Workability and multiple re-use make fir plywood ideal for such applications.

3. smooth concrete surfaces

Fir plywood was specified by the California State Highway Department to assure smooth surfaces on all exposed concrete. The contractor, Guy F. Atkinson Co., developed the form system which was moved laterally from one arch to the other, an engineering feat considered to be unique in the construction field.

Close-up of 5/8" fir plywood arch rib form section. After pouring one set of arches, entire falsework was lowered several inches and skidded into place for second set.

Workmen stripping one of giant built-up 80-foot column forms. Forms were of 5/8" fir plywood with 2 x 6 studs and walers. Multiple re-use is one of plywood's many advantages in the form field.

DFPA TESTED QUALITY

Douglas Fir Plywood Association is a non-profit, industry organization devoted to research, promotion, quality maintenance.

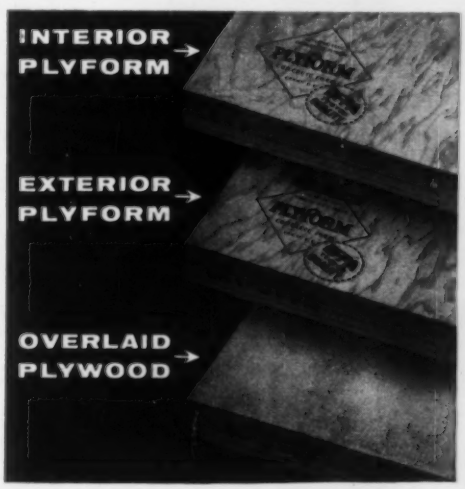
ALWAYS SPECIFY BY DFPA GRADE-TRADEMARKS

INTERIOR PLYFORM®—standard concrete form grade made with moisture-resistant glue: Gives multiple (10-12) re-uses.

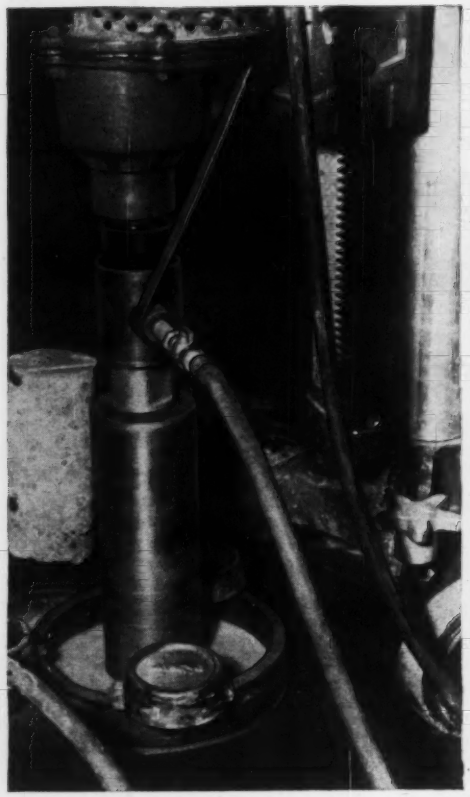
EXTERIOR PLYFORM®—standard form grade made with waterproof glue. Gives maximum (25 or more) re-uses.

OVERLAID FIR PLYWOOD—special panel with hard, glossy fused resin-fiber surfaces. Waterproof glue. Up to 200 re-uses.

FOR YOUR FILES: Complete application-specification-design portfolio assembly. Write (USA Only) Douglas Fir Plywood Association, Tacoma 2, Washington, Dept. 135.



COLORADO STREET PIONEER BRIDGE
LOCATION: Pasadena, California
CONTRACTOR: Guy F. Atkinson Co.
South San Francisco, California



TIME FOR DRILLING 3½" HOLES THROUGH 10" REINFORCED MERAMEC GRAVEL CONCRETE FLOOR CUT FROM 6 HOURS TO 30 MINUTES

JOB: Cut 150 holes 3½" diameter through 10" concrete floors for new conduit feeders in the warehouse section of the old Mart Building, now the St. Louis Area Support Center, St. Louis, Mo. The Building, constructed in 1932, was built of concrete containing Meramac gravel aggregate—"the next thing to flint". Chiseling these holes would have resulted in jagged and uneven holes, much dirt and noise, a big clean-up job and much patching to finish up the job and would have averaged six hours each for two men.

CONTRACTOR: The Sachs Electric Corporation, St. Louis, Mo.

TOOLS: Model C Truco Diamond Drilling Machine with 350 rpm motor and 3½" O.D. Truco Diamond Drill Bit.

DESCRIPTION: Truco unit was used mounted on its mobile base and moved to location on its rubber tired wheels. Actual drilling time on each hole was from 6 to 9 minutes depending upon the number of reinforcing rods to be cut. Each completed hole averaged 30 minutes including all moving, set-up and core removal. (Compare with previous 6 hours for two men with air hammers.) Completed hole was clean and smooth and no patching needed. Truco unit is completely portable by one man and is designed for high speed drilling in practically any location. Wired for 110 V, 60 cycles or less.

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Truco Swivel Division
WHEEL TRUEING TOOL CO.
27-3200 W. Davison Ave. • Detroit 38, Michigan

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17333 Healy Avenue • Detroit 12, Michigan
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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

February 25 Massachusetts March 3 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Golden & O'Brien, 479 Main St., Indian Orchard, Mass. CA **$1,147,023**, est. $1,290,313. hy. and bridge work, relocation Rte. 57, FAP S-115 (1), Agawam. Bids Jan. 21. CD 1/24, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Lane Constr. Corp., P.O. Drawer 911, Meriden, Conn., LB **$3,197,624**, est. $4,095,729, hy. relocation Rte. 5, FA Proj. I-IN-351 (2), Contr. A, Longmeadow. CD 1/24.

BUILDINGS—LB & CA

▲ **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me., LB **$1,158,000**, Arthur G. Gould Memorial HOSPITAL, off Academy St., PRESQUE ISLE, ME. Presque Isle General Hospital, Second St., Presque Isle, Me. Bids Feb. 12. CD 1/15.

▲ **H. V. Collins Co.**, 99 Gano St., Providence, Rhode Island, LB **$2,313,300**. Memorial HIGH SCHOOL and CONVENT, NORTH DARTMOUTH, MASS. Roman Catholic Archdiocese of Fall River, 362 Highland Ave., Fall River, Mass. Bids Feb. 5. CD 1/15.

▲ **Patrick J. O'Leary Bldg. Co., Inc.**, 3 Pleasant St., Dedham, Mass. CA Approx. **$1,000,000**. OFFICE BLDG., QUINCY, MASS: Bethlehem Steel Co., Shipbuilding Div., 97 Howard St., Quincy, Mass. Bids Jan. 24. CD 1/22.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 4, New Jersey

BUILDINGS—BA

▲ **N. Y., Brentwood**—SCHOOL—BA 2/27—Bd. Educ., 3rd Ave., two elementary schools and one Junior High School. $4,000,000. Louis F. Jallade, 597 Fifth Ave., New York, Zone 17, archt.

▲ **N. Y., Fresh Meadows**—SCHOOL—BA 2/28—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures, electric passenger elevator for Northeast Queens High School, North Hempstead Turnpike, Utopia Parkway, 59 Ave. and Fresh Meadow Lane. $6,894,000. Extended date. Plans deposit $50 for general constr., $20 each for plumbing and drainage, heating and ventilating and electrical work and lighting fixtures, $5 for electric passenger elevator. CD 1/16.

▲ **Del., Dover**—COLLEGE—BA 3/26—Delaware State College, Campus, Dover, 4 college bldgs., Delaware State College. $1,225,000. W. Ellis Preston, 903 Jefferson St., Wilmington, archt. CD 2/4.

BUILDINGS—SLC

N. Y., Brooklyn—PLANT OFFICE—Piel Bros., 315 Liberty Ave., Zone 7, soon lets contract plant office, 315 Liberty Ave. $750,000. Kahn & Jacobs, 2 Park Ave., New York, Zone 16, archts.

▲ **Pa., Wyncote**—SCHOOL—Roman Catholic Archdiocese of Phila., 310 N. 19 St., Phila., soon lets contract. Bishop McDevitt High School, $1,250,000, Stickle & Assocs., 2422 Prospect Ave., Cleveland, O., and 135 Narberth Ave., Narberth, Pa., archts. CD 8/27/54.

HEAVY CONSTRUCTION—LB & CA

▲ **PENNSYLVANIA**—Commonwealth of Pa., Dpt. Hys., 506 North Office Bldg., Harrisburg,
F. A. Canuso & Son, Inc., 173 W. Roosevelt Blvd., Phila., Pa. CA **$1,247,597**, flex. base with bit. surf. 50 ft. wide exten. existing concrete arch bridge and constr. steel I-beam bridge 1.14 mi. L. R. 46 119 from Jenkintown Borough SW, Cheltenham and Abington Twps., Montgomery Co. Bids Dec. 13. CD 12/18, under LB.

▲ **Missouri Valley Dregding Co.**, 1331 S. 20th St., Omaha, Neb. CA Section 1 from Eagle Point, N. J. to west bank of Delaware River incl. river crossing 5.6 mi. 24 in. line. CA Section 2 from west bank of Delaware River to Laurel's Booth Station site in Delaware County Pa. approx. 20 mi. 24 in. line. PENNSYLVANIA AND OHIO. Laurel Pipe Line Co., 402 Dauphin Bldg., Harrisburg, Pa. Total est. **$50,000,000** 440 mi. products pipe line from Phila., Pa. area to Cleveland O. CD 5/13. Constr. in April.
Engineers Limited Pipe Line Co., 200 Bush St., San Francisco, Calif. CA Section 3, Booth Station to Mechanicsburg Station near Harrisburg approx. 106 mi. 24 in. line (Pennsylvania and Ohio);
Panama, Inc., Commerce Bldg., Houston, Tex. CA Section 4, Mechanicsburg Station to Duncansville Station approx. 78 mi. 20 in. line; CA Section 5, Duncansville Station to Aliquippa Station in Beaver County approx. 113 mi. 18 in. line, incl. Ohio and Allegheny River Crossings (Pennsylvania and Ohio);
Williams Bros. Co., National Bank Tulsa, Bldg., Tulsa Okla. CA Section 6, Aliquippa Station to Cleveland, 106 mi. 14 in. line (Pennsylvania and Ohio).

▲ **Union Switch & Signal Division of Westinghouse Air Brake Co.**, 1789-1807 Braddock Ave., Swissvale, Pa. CA **$2,017,625**, Bid 4448; automatic block signals and interlocking sys. Broad St. Express tracks, PHILA., Pa. Dpt. Procurement, City Hall Annex, Phila. Pa. Bids July 1. CD 7/16, under LB.

BUILDINGS—LB & CA

▲† **B. J. Lucarelli & Co., Inc.**, 22 Orchard St., Jersey City, N. J., CA **$6,828,000**, 460 unit Capehart HOUSING and site development at Griffiss Air Force Base, ROME, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 1/31, under LB.

▲ **Thomas Pagan**, 6825 Westfield Ave., Pennsauken, N. J., CA **$1,145,600**, Woodrow Wilson HIGH SCHOOL alterations, addns., CAMDEN, N. J. Bd. Educ., Camden, N. J. Bids Jan. 9. CD 1/31, under LB;
Cresco Builders, 6219 Crescent Blvd., Pennsauken, N. J., CA **$843,000**, general contract Camden SENIOR HIGH SCHOOL alterations, addns. (Camden, N. J.).

▲† **B. J. Lucarelli Co., Inc.**, 22 Orchard St., Jersey City, N. J., CA **$1,912,750**, 2nd increment, 120 units, wood frame, row type HOUSES, outside utilities, roads, walks, etc., ENG-30-075-58-27, FORT MONMOUTH, N. J. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Sept. 18. CD 9/23, under LB.

▲ **Blase A. Ravikco**, Branch and Garden Sts., Mount Holly, N. J. Separate Contracts. **$1,000,000**, 70 unit RESIDENTIAL DEVELOPMENT, Rte. 38, etc., MOORESTOWN, N. J. Frank W. Hall, 503 4 Ave., Haddon Heights, N. J., archt.

▲ **Coopersmith Bros., Inc.**, Phillipsburg, N. J. CA **$1,291,543**, HIGH SCHOOL; Slatington, ALLENTOWN, PA. Northern Lehigh Jt. School Auth., Slatington, Pa. Bids Jan. 6. CD 1/24, under LB.

▲ **Joseph R. Farrell, Inc.**, 4424 Market St., Phila., Pa. LB **$1,744,966**, general contract GENERAL HOSPITAL, CHESTER, PA. Sacred Heart Hospital, 9th and Wilson Sts., Chester, Pa. McCormick Taylor Assocs., Suburban Station Bldg., Phila., Pa., engrs. Bids Jan. 30. CD 1/7.

▲ **Radnor Wood, Inc.**, c/o Joseph Girsh, 1325 Walnut St., Phila., Pa. Separate Contracts. **$1,680,000**. 140 RESIDENTIAL DEVELOPMENT, Ridge Ave., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **H. B. Alexander & Son, Inc.**, 315 Vaughn St., Harrisburg, Pa., CA **$1,600,000**, PLANT addns., SHIREMANSTOWN, PA. Quaker Oats Co., P. R.R. and Railroad Ave., Shiremanstown, Pa.

▲ **Boyd H. Kline**, Bloomsburg, Pa. CA **$1,000,000**, CONVENT and CHAPEL addn., WILLIAMSPORT, PA. Divine Providence Hospital, 1100 Grampain Blvd., Williamsport, Pa. Bids Dec. 19. CD 1/15, under LB.

▲ **Bd. Educ.**, Prince George Co., Upper Marlboro, Md., rejected bids SENIOR HIGH SCHOOL, Oxon Hill, UPPER MARLBORO, MD. LB **$2,064,000**. Will readvertise. CD 2/7, under LB.

SOUTH

BUILDINGS—BA

▲ **Va., Fairfax**—SCHOOL—BA 3/4—Fairfax Bd. Educ., Fairfax high school, Vienna. $1,600,000. Plans deposit $25. Dixon & Norman, 1103 E. Main St., Richmond, archts. CD 10/2.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH CAROLINA**—State Hy. Dpt., C. R. McMillan, ch. hy. comr., Hotel Jefferson, Columbia,
Robert E. Lee & Co., Inc., P.O. Box 417, Manning, S. C. and **Fox Constr. Co., Inc.**, Lexington, S. C. CA **$2,069,842**. b. conc. surf. for constr. 4 lane divided hy. on US Rte. 276 from Fountain Inn to US Rte. 221 12.698 mi. S. C. Docket No. 30.365, F. A. Proj. Nos. F-84 (8) & F-2611 (1) Laurens Co. Bids Nov. 26. CD 12/5, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,
Tenn.—**J. B. Michael & Co.**, 1021 Haywood St., Memphis, Tenn. CA **$2,529,978**. grading, drainage, constr. 8 bridges (5 single and 3 twin structures) and paving certain cross and side roads with bit. materials (plant mix) and c. conc. 8.446 mi. section of Int. State Rte. No. 505 beginning 1.5 mi. west of Haywood, Madison Co. line and extending to 0.6 mi. west of Lower Brownsville Rd., Proj. No. I-505 (8) Haywood and Madison Counties; CA **$2,299,060**, grading, drainage, constr. 7 bridges (2 single and 5 twin structures) and paving certain cross and side roads with bit. materials (plant mix) and c. conc. 5.549 mi. section of Interstate Rte. 505 beginning at point 0.6 mi. west of Lower Brownsville Rd. and extending to 0.4 mi. east of State Rte. No. 20, Proj. No. I-505 (9) Marison Co.;
Tenn.—**Forcum-Lannon Inc.**, Dyersburg, Tenn. CA **$830,168**. grading, constr. 5 bridges, constr. soil-cement or gravel or chert base and surf. with bit. materials 5.247 mi. section relocated State Rte. No. 100 beginning approx. 1.5 mi. west of Hatchie River and extending to State Rte. No. 138 north of Toone, Proj. No. F-043-1 (2) Hardeman Co.;
Tenn. S & W Constr. Co., 2630 Midland Ave., Memphis, Tenn. CA **$1,664,004**. grading, drainage, constr. 4 bridges 2.821 mi. on SE section of Circumferential Interstate Rte. No. 511 beginning approx. 0.3 mi. west of Perkins Rd. near Nonconnah Creek and extending to approx. 0.4 mi. south of Park Rd., Proj. No. I-511 (4) Shelby Co. Grand total $7,323,210. Bids Jan. 17. CD 1/24, under LB.

▲ **Hyde Constr. Co.**, 1804 N. Mill, Jackson, Miss. CA **$1,080,000**. natural gas sys. to serve McEwen, Weverly, New Johnsonville, TENNESSEE. Humphreys County Utilities Dist., Waverly, Tenn. Albert Switzer & Assocs., 4914 N. State, Jackson, Miss., engrs. Awarded Dec. 31.

BUILDINGS—LB & CA

▲ **J. W. Rich Constr. Co.**, 1100 W. Main St., Humboldt, Tenn. CA **$1,302,129**. constr. Student Family APARTMENTS at University of Mississippi, UNIVERSITY, MISS. Mississippi State Bldg. Comn., E. J. Yelverton, secy., 1503 Woodolk State Office Bldg., Jackson, Miss. Bids Nov. 21. CD 7/6/56.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES

February 25 Illinois March 4 Michigan, Ohio

STREETS AND ROADS

February 25 Illinois, Indiana March 4 Michigan, Ohio

▲ **ILLINOIS**—BA 2/27—Illinois State Toll Highway Comn., 40 N. Wacker Dr., Chicago,
Cook, DuPage, Lake, Kane and Winnebago Counties—8 maintenance bldgs., 4 on Tri-State Tollway, 3 on N. Ill. Tollway and 1 on E-W Tollway, Cont. MA-1 & MA-2, $1,900,000. CD 1/21.

BUILDINGS—BA

▲ **Ind., Bloomington**—SWAIN HALL—BA 2/25—J. A. Franklin, vice pres. and treas., Indiana University, Bloomington, 4 story, 91 x 270 ft. masonry steel, concrete Swain Hall addn. $1,500,000. Plans deposit $25, A. M. Strauss, Inc., 600 Strauss Bldg., Fort Wayne, engr.-archt. CD 5/21/56.

▲ **O., Disney**—SCHOOL—BA 3/6—Bd. Educ., Sidney, high school. $2,000,000. CD 11/23/56.

▲ **Ill., Arlington Heights**—HOSPITAL—BA 3/11—Northwest Community Hospital, 307 N. Bothwell St., Palatine, 1 and 4 story hospital, Central Rd. between State and Wilke Rds. $2,250,000, Skidmore Owings & Merrill, 100 W. Monroe St., Chicago, archts. CD 10/8.

▲ **O., Dayton**—HOUSING—BA 3/11—Dayton Metropolitan Housing Auth., 1201 Brennan Dr., 314 low rental housing units, Ohio Proj. 5-6. Allied Architects, Emory J. Ohler, chn., 1310 Hulman Bldg., archts. CD 5/10/55.

▲ **Wis., Milwaukee**—SCHOOL—BA 3/20—Bd. School Directors, 1111 N. 10 St., Zone 3, Boys' Technical High School. $1,000,000. Plans deposit $100, Fritz von Grossmann, 5455 W. Burleigh St., archt. CD 3/21/57.

BUILDINGS—SLC

▲ **Ill., Skokie**—OFFICE—Allstate Insurance Co., 7401 Skokie St., soon lets contract 2 story, 100,000 sq. ft. brick office bldg., W. side of Edens Expressway, n. of Howard, $1,500,000, Dunlap & Edgar, 333 N. Michigan Ave., Chicago, archts. CD 7/29.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Bids opened Feb. 4,
O.—**J. A. Jones Constr. Co. of Charlotte, N. C.**, P.O. Box 18, Berlin Heights, O., LB **$3,952,216**, est. $4,181,000 (9 bidders) Proj. SR 1-7.56, ACI-1103 (26) Type T-71 and structures 6.391 mi., Ashtabula Co.;
O.—**The Red Eagle Corp.**, 4479 Indianola Ave., Columbus, O., LB **$3,194,447**, est. $3,629,600 (8 bidders) Contr. SR 1-0.00, 33.31, ACI-1105 (34), Type T-35 and structures 6.205 mi. Delaware and Franklin Counties;
O.—**Connolly Constr. Co., Inc.**, Box 147, Delaware Rd. Marysville, O., LB **$390,232**, est. $458,900 (13 bidders) Contr. SR 69-10.39, S.-857 (3), Type T-35 on B-119 and structures 3.843 mi., Logan Co.;
O.—**The Ohio Engineering Co.**, 105 Sixth St., Lorain, O., LB **$874,427**, est. $965,200, (2 bidders) Contr. SR 82-(4.79 12.47) F-602 (14), Type T-35 and structures, 7.663 mi., Lorain Co.;
O.—**Maxon Constr. Co., Inc.**, 2600 Far Hills Ave., Dayton, O., LB **$2,908,400**, est. $3,259,000 (4 bidders) Contr. USR 25-15.88 ACI-1088, (3) (City of Dayton) Type T-71 and structures 2.185 mi., Montgomery Co.;
O.—**Kane, O'Horo & Haenny, Inc.**, 65 W. Indianola Ave., Youngstown, O., LB **$491,215**, est. $543,600 (11 bidders) Contr. SR 303-(0.01) (5.46), S-50 (6) Type T-35 and T-32 on B-119 and structures 2.915 mi., Portage and Summit Counties. CD 2/20.

▲† **A. M. Kinney, Inc.**, 2905 Vernon Pl., Cincinnati, O., CA **$1,200,000**, for air conditioning work of post office annex, 5 and Walnut St., CINCINNATI, O. General Services Admin., General Services Bldg., Wash. 25, D. C. CD 3/7/57.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,
C. R. Meyer & Sons Co., 50 State St., Oshkosh, Wis., CA **$1,187,288**, grade, base, Structure B-51-7 and

(Continued on page 103)

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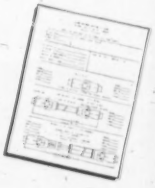
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ROCKWELL SPRING AND AXLE COMPANY

ALLEGAN, MICHIGAN

UNIVERSAL JOINTS AND DRIVE LINE ASSEMBLIES

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(Continued from page 101)

concrete pavement 1.161 mi. Racine-Tabor (Ives Subway and approaches) Road, S. T. Hy. 32, Contr. 1, Projs., FG 01-1(27) and F 01-1(28), Racine Co. Bids Jan. 28. CD 2/4, under LB.

BUILDINGS—LB & CA

▲ **Knowlton Constr. Co.,** 1133 Columbus St., Bellefontaine, O., CA **$1,373,000,** general contract 4 story ENGINEERING CLASSROOM and OFFICE BLDG., at Ohio State University, COLUMBUS, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Bids Jan. 31, awarded Feb. 7. CD 2/12, under LB.

▲ **Stakich Realty Co.,** 815 E. 185 St., Cleveland 19, O., Own Forces. **$2,300,000,** 179 HOMES in Lake Overlook Estates, foot of Rte. 306, MENTOR-ON-THE-LAKE, O. Louis J. Rotman, 31715 Vine St., Willowick, O., archt.

▲ **M. W. Kellogg Co.,** 711 Third Ave., New York, N. Y., CA **$2,000,000,** 2,000 bbl. per day (5th unit) ALKYLATION PLANT, TOLEDO, O. Gulf Oil Corp., Gulf Bldg., Pittsburgh, Pa.

▲ **Superior Constr. Co.,** 1900 E. 7 St., Gary, Ind., CA **$1,500,000,** 2 story, bsmnt., brick SEMINARY, SCHERERVILLE, IND. Province of St. Joseph of the Capuchin Order, Rev. Bartholomew Kastell O.F.M. CAP, 7104 Arizona Ave., Hammond, Ind. Bids Jan. 21. CD 2/7, under LB.

▲ **Morrison Constr. Co.,** 1834 Summer St., Hammond, Ind., CA **$10,000,000,** Polyethylene PLANT and crude butadiene facilities, Standard Ave., WHITING, IND. Union Carbide Chemical Co., 30 E. 42 St., New York 17, N. Y.

▲ **Edward Gray Corp.,** 12233 S. Ave. "O", Chicago, Ill., CA **$3,269,718,** Glenbard East HIGH SCHOOL, Main and Wilson Rd., LOMBARD, ILL. School Dist. 87, 670 Crescent St., Glen Ellyn, Ill. CD 1/28.

▲ **Detroit Edison Co.,** 2000 2nd Ave., Detroit 26, Mich., Own Forces, two turbine generators at St. Clair POWER PLANT, MICHIGAN.

▲ **Consolidated Constr. Co.,** 800 Marquette St., Bay City, Mich., CA **$1,940,000,** SERVICE CENTER, BAY CITY, MICH. Consumers Power Co., Dan E. Karns, pres., Jackson, Mich. Bids Jan. 21. D 1/3.

▲ **R. E. Dailey & Co.,** 21675 Telegraph Rd., Detroit, Mich., CA **$1,800,000,** OFFICE BLDG., Pallister and Second, DETROIT, MICH. International Business Machine Corp., 12727 West Warren, Dearborn, Mich. **(Correction—contractor's address).** CD 1/22, under CA.

▲ **United Engineers & Constructors,** 1401 Arch St., Phila., Pa. CA, ELECTRIC POWER GENERATION STATION to operate from steam from Enrico Fermi Atomic Power Plant, MONROE, MICH. Detroit Edison Co., 2000 2nd Ave., Detroit 26, Mich.

▲ **United Engineers & Constructors,** 1401 Arch St., Phila., Pa., CA, installing and housing 320,000 kw STEAM TURBINE GENERATING UNIT, RIVER ROUGE, MICH. Detroit Edison Co., 2000 2nd Ave., Detroit 26, Mich.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
February 28 South Dakota

STREETS AND ROADS
February 27 Kansas, Nebraska February 28 South Dakota March 4 Colorado

▲ **Minn., Rochester**—AIRPORT FACILITIES—BA 2/26—City, Elfreda Reiter, clk., airport constr., consisting base, bit. surf. and concrete paving about 337,000 sq. yd., plant mixed; 45,700 sq. yd. concrete paving, etc., municipal airport. (paving proj.) $1,200,000 Plans deposit $20. K. M. McGhie, Rochester, Minn.; engr. CD 12/14/55.

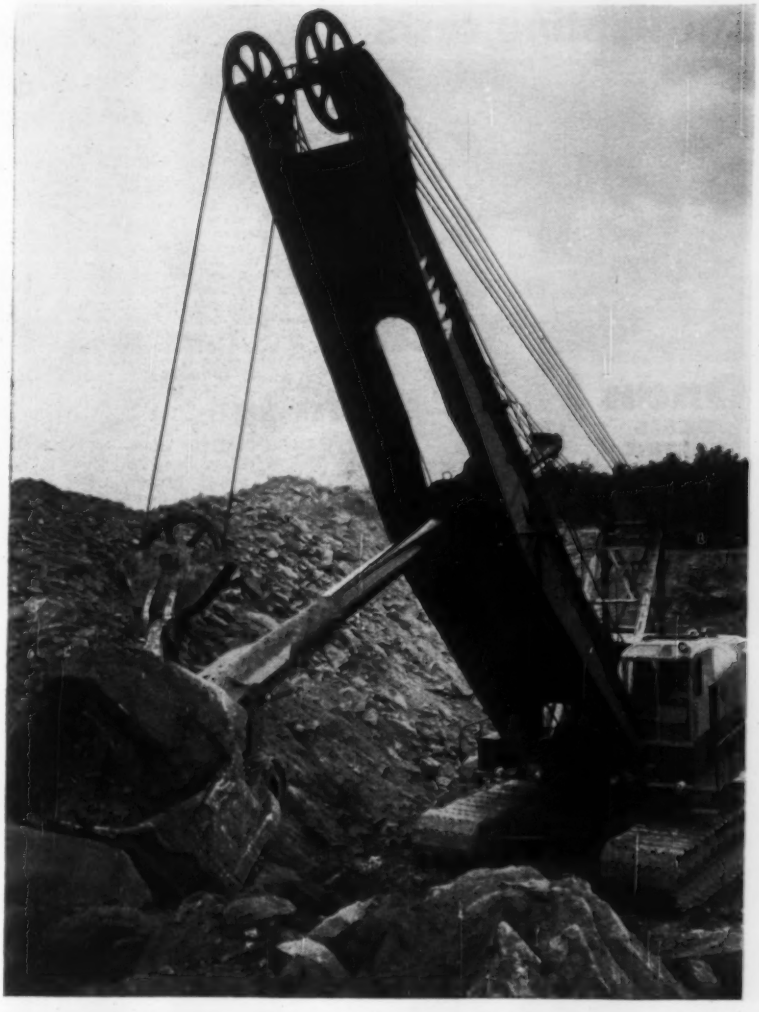
▲† **Tex., Amarillo**—AMMUNITION BLDG.—BA About 3/19—U. S. Eng., Box 61, Tulsa, Okla., Sched. 1, 150,000 sq. ft., masonry bldg., 2,500 sq. ft. masonry type ammunition bldg., 3 ordnance structures, storage structures, appurtenances, $1,000,000-$4,000,000; Sched. 2, all exterior facilities in bldg. schedule, 122,000 sq. yd. asphaltic concrete drives, parking areas, water, gas, sewer lines, etc., $250,000-$1,000,000, Amarillo Air Force Base, ENG-34-066-58-20. CD 9/17.

BUILDINGS—LB & CA

▲† **ACF Industries (American Car & Foundry Co.),** 36 Church St., New York 8, N. Y. and **General Electric Co.,** River Rd., Schenectady, N. Y. (two proposals) LB design, develop and construct test operate boiling water NUCLEAR REACTOR and conventional fuel fired superheater for Rural Co-operative Power Assn., Elk River, MINNESOTA. Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash., D. C. CD 12/4.

▲ **General Electric Co., Apparatus Sales Div.,** 1 River Rd., Schenectady, N. Y. CA **$4,731,900.** Contr. 260 furnish and erect one 125,000 kil. steam turbine GENERATOR UNIT and accessory equipment at North Omaha Power Station, OMAHA, NEB. Omaha P. Power Dist., 17 and Hearney Sts., Omaha, Neb. H. J. Counsell, Omaha P. Power Dist., 17th and Harney Sts., Omaha, Neb., engr. Bids Dec. 19, awarded Jan. 16. CD 1/7, under LB.

▲ **Universal Constr. Co.,** 1202 Southwest Blvd., Kansas City, Kan., CA **$1,816,000,** construct and finance 2 story, part 4 story POST OFFICE and COURT HOUSE, 7th and Armstrong St., KANSAS CITY, KAN. General Services Admin., Deputy Regional Dir., Region 6, 2306 E. Bannister Rd., Kansas City 14, Mo. CD 2/6, under LB.



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The bucket always wins the tug-of-war—because the shovel is equipped with a National Torque Converter. The Converter cuts crowding speed w-a-y down—and boosts crowding power way up!

The National Torque Converter not only automatically "tailors" the power delivered to the need, thus multiplying the useful workability of the machine . . . it also absorbs the damaging shocks that cause operator fatigue and equipment failure. If you build or operate any heavy equipment powered at from 100 to 1000 hp, National Torque Converters may improve its performance. Write:

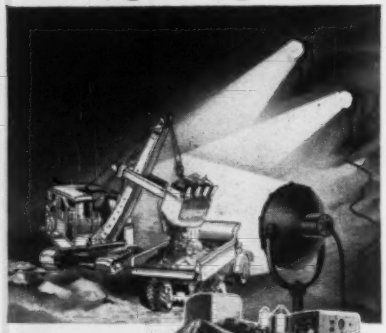
THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

Two Gateway Center, Pittsburgh 22, Pa.

Pace-Setters in the progress of industrial power transmission

Cut lighting costs



Onan
DIESEL ELECTRIC PLANTS

Save you money every hour. Pay for themselves quickly on big lighting jobs. Built for rugged service with extra-large bearing surfaces, Stellite exhaust valve seats and other long life features. Engine and generator direct connected . . . no belts or couplings. 3KW, single cylinder; 5KW, two-cylinder. Standard voltages.

Gasoline Models: 500 to 75,000 watts
Write for folder of portable models

D. W. ONAN & SONS INC.
2890A UNIVERSITY AVENUE SOUTHEAST
MINNEAPOLIS 14, MINNESOTA

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
PILE TESTING
•
UNDER-PINNING
•
BRIDGES
•
PIPE PUSHING
•
SOIL TESTING

RICHARD DUDGEON INC.
789 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

PUMPS MADE IN WEST GERMANY

FOR YOUR OVERSEAS JOBS

SUBMERSIBLE PUMPS for water Cap. to 3700 GPM. Heads to 1300 Feet. Bore Holes 6" & up. Special design for dirty water.
CENTRIFUGAL PUMPS (also H^2O cooled). Cap. to 3200 GPM. Heads to 1000 Feet.
SCREW BLADE TURBINE PUMPS. Cap. to 15,800 GPM. Heads to 100 Feet.
SEWAGE CENTRIF. PUMPS. Cap. to 1200 GPM. Heads to 265 Feet.
ROTARY PISTON PUMPS for Tars, molasses, soap, etc.
GASOLINE & DIESEL PORTABLES.

RITKO
232 Belleville Turnpike, Kearny, N. J.
Repr.:—Gebr. Ritz & Schweizer.

▲ **King Constr. Co.,** Box 39, Texarkana, Tex., CA $2,867,448, constr. addn. to BLDG. 700, ENG-34-066-58-9, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa, Okla. Bids Jan. 22. CD 1/28/58, under LB.

▲† **J. W. Bateson,** 10130 Monroe Dr., Dallas, Tex., LB $1,229,500, 75 unit Capehart HOUSING, White Sands Proving Ground, ENG-29-005-58-25, LAS CRUCES, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Feb. 11. CD 1/29.

▲† **U. S. Eng.,** Box 1538, Albuquerque, N. M., rejected bids Feb. 4, 125 Capehart HOUSING UNITS, Wm. Beaumont General Army Hospital, EL PASO, TEX. Est. $1,875,000. CD 1/8.

Chambers Constr. Co., 1904 Taft, Houston, Tex., CA $991,170 combined bid for 2 schools; "Glenbrook" and "Timbergrove" Elementary SCHOOLS, HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol St., Houston, Tex. Harvin C. Moore, co-ord. archt., 2006 W. Alabama, and Matt E. Howard, Jr. & Assoc., archts., 2444 Times Blvd., Houston, Tex. Bids Jan. 22. CD 2/3, under LB.

▲ **Hensel Phelps Constr. Co.,** Box 604, Greeley, Colo., CA $1,425,000, general contract, 3 story, 74,000 sq. ft. PLANT SCIENCE BLDG., etc., FORT COLLINS, COLO. Colorado A & M College, Fort Collins, Colo. Bids Jan. 28, awarded Feb. 7, CD 2/10, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 12 California — March 7 Oregon & Washington

STREETS AND ROADS

February 27 Nevada — March 7 Arizona
March 12, 13 California

▲† **California**—BA 3/6—U. S. Eng., 751 S. Figueroa St., Los Angeles, Imprv. Upper Rio Hondo Channel, Los Angeles Co. Drainage, Lower Azusa Road to Valley Blvd., River Mile 14.91 to River Mile 13.75, ENG-04-353-58-11, $1,750,000. CD 10/24.

BUILDINGS—BA

▲ **Calif., LaVerne**—SCHOOL—BA 3/5—Bonita Union High School Dist., 1124 East Bonita Ave., first increment 61,000 sq. ft. new Bonita Union High School, D St. and Peyton Rd. $1,300,000. CD 7/17.

HEAVY CONSTRUCTION—LB & CA

▲ **UTAH**—State Rd. Comn., State Capitol, Salt Lake City,

Tiago Constr. Co., 3399 S. 2nd W., Salt Lake City, Utah. CA $1,351,505 grading, draining 4.493 mi. FAP No. 1-01-7 (2) 1st contract, Davis Co. Bids Dec. 3, awarded Jan. 3. CD 12/12, under LB.

▲ **UTAH**—State Road Comn., State Capitol, Salt Lake City, Bids opened 2/4,

Utah—**Jack B. Parson Constr. Co.,** Smithfield, Utah. LB $972,725 1st contract 3½ in. plant mix bit. surf. for 4.703 mi. on Interstate Hy. 82. F.A.P. No. I-03-1 (1) Box Elder Co.

Utah—**W. W. Clyde,** Springville, Utah. LB $1,073,466, est. $1,140,296, 4 in. plant mix bit. surf. 10.504 mi. US 40 FAP No. F-019-1 (2) Wasatch Co. CD 1/28.

▲ **OREGON**—Oregon Hy. Comn., Highway Bldg., Salem, Bids opened 2/6,

Ore.—**Darkenwald Constr. Co. & Harms Bros.,** 2131 Fulton Ave., Sacramento, Calif., LB $1,635,781, (13 bidders) grading, 3.93 mi. Thomas Creek-Cape Ferrelo section, Oregon Coast Hy., FAP BF 124-(12), Curry Co.;

Ore.—**Warren Northwest, Inc.,** Box 5072, Portland, Ore. LB $603,772, (15 bidders) paving 6.07 mi. Myrtle Creek-Fords Bridge section, Pacific Hy., FAIP 1-78(39) Douglas Co.;

Ore.—**Calkins Crushing Co.,** Box 547, Oceanlake, Ore. LB $81,244 (8 bidders) oiling 39.09 mi. John Day and Baker-University Highways, Grant and Baker Counties;

Ore.—**Hudspeth Pine,** Prineville, Ore., LB $199,320 (21 bidders) grading 3.23 mi. Richardson-Siuslaw River section, Richardson Eugene Hy., FAP S-234 (13) Lane Co. CD 1/30.

▲ **Holmes & Narver Inc.,** 828 S. Figueroa St., Los Angeles, Calif. CA $5,000,000, 42x317 ft., 350x540 ft. concrete block hanger, office and shop bldgs., 7001 Maintenance Rd., Los Angeles International Airport Tr. Venice Dist., LOS ANGELES, CALIF. Trans World Airlines Inc., 5700 Avion Dr., Los Angeles 45, Calif.

▲ **Matt J. Zaich Co.,** 6828 Farmdale Ave., North Hollywood, Calif. CA $3,325,721 constr. East Compton Creek No. 2 Storm Drain Unit 2, Compton, Lynwood, and Southgate, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist. 2250 Alcazar St., Los Angeles, Calif. Bids Jan. 24, awarded Feb. 4. CD 1/29, under LB.

Piombo Constr. Co., Box 935, San Carlos, Calif. LB $935,500 (11 bidders), airport fill, runway extension imprvs. at S. F. International Airport (placing fill for runway extension) Contr. 213, SAN FRANCISCO, CALIF. Public Utilities Comn., City Hall, San Francisco, Calif. CD 1/20.

BUILDINGS—LB & CA

▲ **Wick Constr. Co.,** 720 N. 35 St., Seattle, Wash., CA $1,436,339, general contract Northwest JUNIOR HIGH SCHOOL, SEATTLE, WASH., School Dist. No. 1, 815 4 Ave. N., Seattle, Wash. Bids Feb. 4, awarded Feb. 7. CD 2/7, under LB;

Wenzler & Ward P. & H., Inc., 2109 Western Ave., Seattle 1, Wash., CA $383,405 (8 bidders), mechanical contract high school (Seattle, Wash.)

▲† **Procurement Officer, Fairchild Air Force Base,** Spokane, Wash., rejected bids Dec. 9, 64 units Capehart family HOUSING, SPOKANE, WASH., LB $1,344,199. CD 1/24, under LB.

▲ **B. Johnson & Assocs.,** 5407 20th Ave. N.W., Seattle, Wash. LB $3,562,000 (6 bidders), 250 unit HOUSING, SPOKANE, WASH. Base Procurement Office, Fairchild Air Force Base, Spokane, Wash. Bids Feb. 11. CD 1/17.

▲ **M. H. Golden Constr. Co.,** 3485 Noell St., San Diego, Calif. LB $1,944,669 (9 bidders) El Cortez MOTEL and PARKING GARAGE, bounded by Beach, Ash, 6th and 7th Sts., SAN DIEGO, CALIF. Harry Handley, c/o Paderewski, Mitchell & Dean, archts., 521 B St., San Diego, Calif. CD 8/21/53.

▲ **Meyer & Young,** c/o Hewitt C. Wells, archt., 165 Jessie St., San Francisco, Calif. Owner Builds. $2,000,000, six 4 story, rein.-con. Lincoln Way APARTMENTS, SAN FRANCISCO, CALIF. Gould & Degenkolb, 149 California, San Francisco, Calif., structural engrs. Vandament & Darmsted, 156 2nd St., San Francisco, Calif., elec. and mec. engrs.

▲ **Steed Bros.,** 714 Date St., Alhambra, Calif., CA $2,500,000, HOSPITAL, 4101 Torrance Blvd., TORRANCE, CALIF. Little Co. of Mary Hospital, 1526 Cravens St., Torrance, Calif. Awarded Feb. 4.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

March 20 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **Foundation Maritime Ltd.,** 1900 Sherbrooke St. W., Montreal, Que., LB $1,276,063, (23 bidders) constr. Marine Agency Wharf, 7 rein. con. cribs, concrete gravity wall, steel sheet piling retaining wall and timber crib work, SAINT JOHN, N. B. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Feb. 5, CD 1/30.

▲ **Ellis-Don Ltd.,** Box 852, London, Ont., LB $4,389,000, constr. 1 story, 60 x 1,250 ft., 2nd story 60 x 500 ft., 3rd story 60 x 200 ft. plus a 36 ft. tower of curtain wall constr., rein.-con. fdn., rein.-con. columns (round) structural steel interior columns. International terminal bldg., at Airport, Kelly Lake, HALIFAX, N. S. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Gilleland & Strutt, 304 Laurier Ave. W., Ottawa, Ont., archt. C. D. Dawson Co., 95 Dresden Row Halifax, N. S., assoc. archt. Bids Jan. 16. CD 12/11/57.

BUILDINGS—LB & CA

▲ **Belmont Constr. Co. Ltd., Elemeda Apartments Ltd. & Glencairn Gardens Ltd.,** 246 Vaughn Rd., Toronto, Ont., Owner Builds, $1,000,000, three 4 story, 55 suites each, masonry APARTMENTS, concrete block fdns., Sloan Ave. near Eglinton Ave. E., TORONTO, ONT. John H. Daniels, 166 Wilson Ave., Toronto, Ont., archt.

▲ **S. & G. Realty Holdings Ltd.,** 534 Lawrence Ave. W., Toronto, Ont., Owner Builds, $1,250,000, two 96 suite, 3½ story masonry constr. felt and gravel roofing APARTMENTS, concrete block fdns. Yonge St. near Cummer Ave., TORONTO, ONT. Freedman & Petroff, 35 Isabella St., Toronto, Ont., archts.

▲ **A. Janin & Co. Ltd.,** 1490 Sherbrooke St. W., Montreal, Que., CA $1,345,000, constr. Forest Biology LABORATORY, Laval University, St. Foye, QUEBEC CITY, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Feb. 6. CD 12/31, under LB.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Mexico, Torreon**—DEPOT—BA 2/27—National Railways of Mexico, Bolivar 19, Mexico City, railroad passenger and freight depot, $2,250,000, Plans deposit $8. CD 10/20/49.

BUILDINGS—LB & CA

▲ **Christiani-Nielson,** c/o Stadler Hurter & Co., engrs., 1501 St. Catherine St. W., Montreal 25, Que., Canada, CA Est. $15,500,000, bleached kraft PULP MILL, SAO PAULO, BRAZIL. Champion Paper & Fibre Co., 601 N "B", Hamilton, O., U. S. A. CD 2/3/58.

FOREIGN

HEAVY CONSTRUCTION—BA

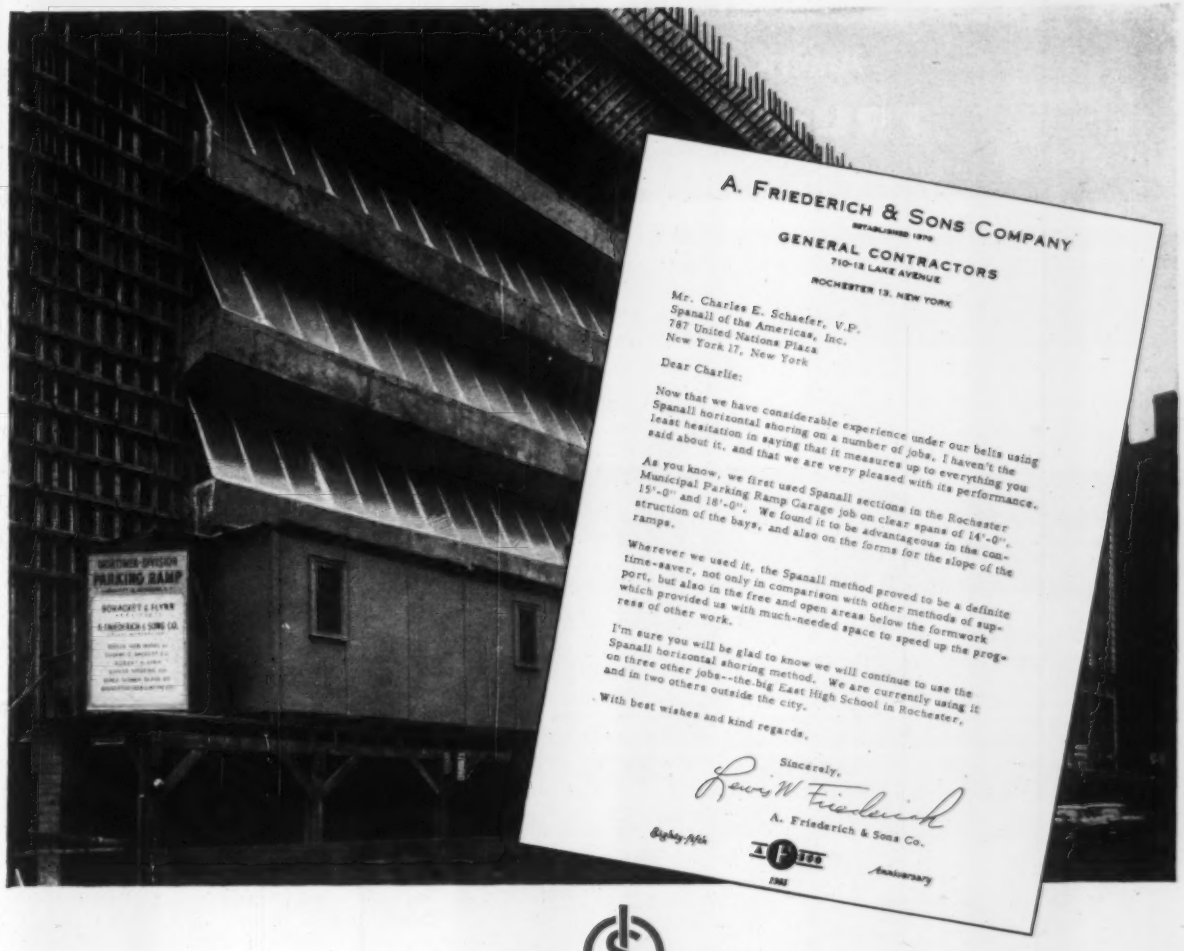
▲ **Jordan and Saudi Arabia**—RAILROAD—BA 4/15—Hedjaz Railway Line, Executive Committee, Damascus, Syria, construct and finance 844 kilometers section of Hedjaz Railway from Ma'an in Jordan to Medina in Saudi Arabia. Total cost $25,000,000. Extended date. Brown & Blauvelt, 468 Madison Ave., New York 16, N. Y., U. S. A., engrs. CD 10/11.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† **Samford-Markowitz,** Madrid, Spain, LB $3,446,417 (4 bidders) Naval Fuel Annex, Spanish Air Base Program, CARTEGNA, SPAIN. Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash., D. C., U. S. A. Bids Jan. 29.

(Proposal Advertisement see pp. 120 to 123)


PARKING RAMP
A. FRIEDERICH & SONS COMPANY
GENERAL CONTRACTORS
710-18 LAKE AVENUE
ROCHESTER 13, NEW YORK
Mr. Charles E. Schaefer, V.P.
Spanall of the Americas, Inc.
787 United Nations Plaza
New York 17, New York
Dear Charlie:
Now that we have considerable experience under our belts using Spanall horizontal shoring on a number of jobs, I haven't the least hesitation in saying that it measures up to everything you said about it, and that we are very pleased with its performance.
As you know, we first used Spanall sections in the Rochester Municipal Parking Ramp Garage job on clear spans of 14'-0", 15'-0" and 18'-0". We found it to be advantageous in the construction of the bays, and also on the forms for the slope of the ramps.
Wherever we used it, the Spanall method proved to be a definite time-saver, not only in comparison with other methods of support, but also in the free and open areas below the formwork which provided us with much-needed space to speed up the progress of other work.
I'm sure you will be glad to know we will continue to use the Spanall horizontal shoring method. We are currently using it on three other jobs--the big East High School in Rochester, and in two others outside the city.
With best wishes and kind regards,
Sincerely,
Louis W. Friederich
A. Friederich & Sons Co.
Eighty-fifth
Anniversary

Ramp Garage Proves Spanall® is Big Time-saver!

HORIZONTAL SHORING

Today there is no product, no method more efficient, nor more time-saving, than SPANALL—the modern, all-steel, *horizontal* shoring for all types of beam and slab concrete deck and floor forms.

This fact was well demonstrated in the construction of the Rochester (N. Y.) Municipal Parking Ramp Garage, as attested in the above letter from the general contractor. Plans called for a grid dome job, with clear spans of 14'0", 15'0" and 18'0"—the latter spans applying to the bays clearly indicated in the photo. SPANALL, spaced 2 feet o.c., were supported by 4 x 6 ledgers on 4 x 4 shores. Except for these 4 x 4 shores, the areas below the SPANALL formwork remained free and clear for much needed traffic and uninterrupted work progress. Cost savings with SPANALL on this type of work average up to 40%.

That's why, on job after job, from coast to coast, in Canada and in Latin America, SPANALL is now accepted as *the one* time-saving, cost-saving horizontal shoring method for concrete floor and deck forms.

Call your local SPANALL distributor today for catalog and complete details. Or write directly to Dept. E.

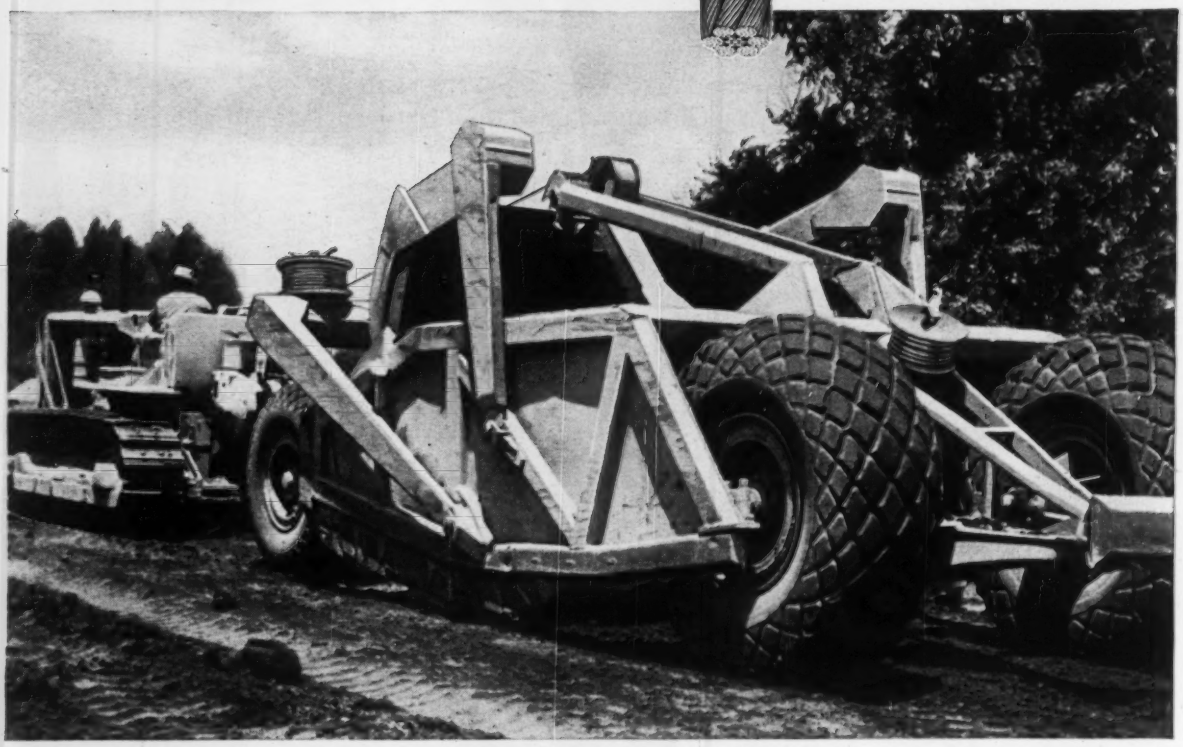
Spanall of the Americas, Inc.
787 United Nations Plaza, New York 17, N. Y.

SPANALL — WITH BUILT-IN CAMBER — IS ENGINEERED FOR AMPLE LOAD-BEARING SAFETY FACTOR

ACCO for Better Values

American Cable **TRU-LAY VHS®** WIRE ROPE

15% STRONGER



"Best Cable We Ever Used...We're for VHS 100%"

says Roadbuilders, Inc., Greenville, South Carolina

Today, more than ever before, road contractors appreciate the need for rugged cable to keep earth-moving equipment rolling on schedule. Many contractors, like Roadbuilders, Inc., have found the best possible answer to longer cable life. They use VHS—the remarkable new grade of wire rope that is tougher, more wear-resistant, and 15% stronger than the next best grade of wire rope. Contractor after contractor has discovered that VHS is still giving service long after other cable has been discarded. If the cable you are now using has failed you when you need it most, then learn how TRU-LAY VHS can help you save time and money.

What's different about Tru-Lay VHS?

TRU-LAY VHS is not just another "brand" of wire rope—it's a new *grade* of wire rope which is tops for quality and performance. Before TRU-LAY VHS (Very High Strength), the best grade you could buy was TRU-LAY Preformed Improved Plow Steel—and it still is the most practical grade of wire rope for some uses. However, where extra strength and toughness are needed—such as for draglines, shovel hoist ropes, scraper and dozer cable—you'll find TRU-LAY VHS outlasts and outperforms any other cable ever made.

Only one source for VHS

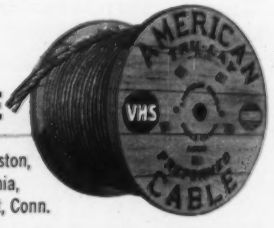
Thanks to expanded production and large warehouse stocks, you can now get immediate shipment of TRU-LAY VHS from American Cable distributors anywhere in the country. But remember . . . there's only one superior grade of wire rope—VHS; and only one company makes it—American Chain & Cable. So tell your distributor you want VHS next time you are ordering wire rope.

ACCO American Cable Division

AMERICAN CHAIN & CABLE

TRADE MARK

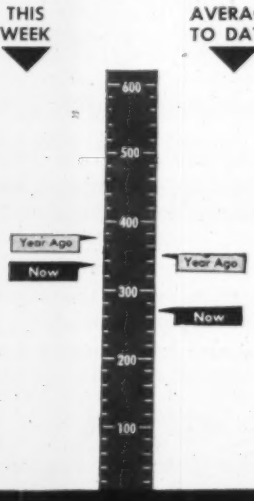
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.



Construction Scoreboard

ACTIVITY THIS WEEK

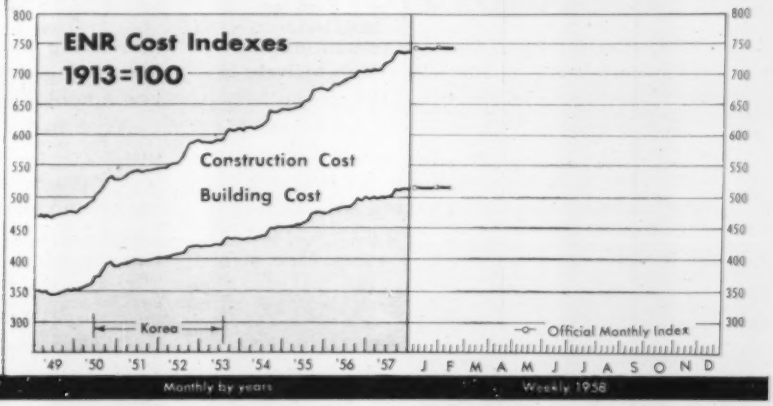
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Feb. 13 1958	% Change from Jan. 13 1958	% Change from Feb. 14 1957
Construction Cost	743.77	+0.03	+4.92
Building Cost	515.78	−0.20	+2.82

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.680; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



AMOUNT OF CONTRACTS LET

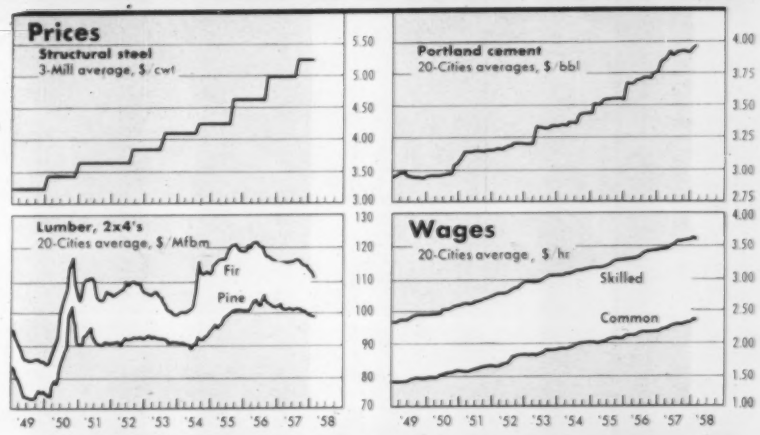
By Ownership	This Week	Cum. 8 wks 1958	Chge '57-'58
	millions		%
All Heavy Constr.	$338.5	$2,128.9	−23
Private	204.2	1,006.0	−25
Public	134.3	1,122.9	−22
State & Municipal	97.0	903.6	−15
Federal	37.3	219.3	−41
By Type of Work			
Public			
Waterworks	3.2	31.6	−40
Sewerage	6.9	83.6	+28
Bridges*	4.7	48.4	−48
Highways	41.2	316.8	−30
Earthwork, Waterways	2.3	130.1	−31
Buildings, Excl. Housing	43.6	292.5	−11
Housing	23.7	152.9	+70
Unclassified	8.7	66.9	−61
Private			
Mass Housing	46.2	305.0	−26
Commercial	23.5	235.3	+55
Industrial	77.8	365.5	−42
Unclassified	56.7	100.3	−30

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Feb. 13	Cum. 7 wks 1958	Chge '57-'58
	millions		%
Corporate Securities	$242.7	$680.1	−10
State and Municipal:			
All Except Housing	245.4	1,045.2	+48
Housing	...	1.0	...
Federal Loans	6.6	38.5	+138
Federal Aid	...	....	...
Total Nonfederal	$494.7	$1,764.8	+20
Federal Appropriations:			
Projects in U. S.	...	....	...
Outside U. S.	...	....	...
Total New Capital	$494.7	$1,764.8	+20



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Feb. 1958	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Feb. 1958	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	558	0	+6.7	456	0	+3.1
Baltimore	670	0	+4.4	520	0	+4.3
Birmingham	593	0	+7.1	477	0	+4.6
Boston	764	0	+2.0	522	−0.2	+2.1
Chicago	835	0	+5.6	527	−0.2	+4.1
Cincinnati	745	−0.4	+4.3	501	−0.6	+2.3
Cleveland	849	−0.5	+3.5	515	−0.8	+1.1
Dallas	547	0	+2.3	451	0	+0.5
Denver	711	+0.1	+5.0	522	+0.1	−0.1
Detroit	851	0	+5.2	545	0	+3.2
Kansas City	742	0	+3.7	517	0	+2.3
Los Angeles	773	−0.7	+4.9	507	−1.1	+1.7
Minneapolis	803	+1.9	+5.9	537	0	+2.0
New Orleans	588	0	+4.0	478	0	+2.8
New York	910	+0.1	+6.7	593	+0.1	+2.5
Philadelphia	775	0	+3.5	561	0	+1.0
Pittsburgh	804	0	+5.5	569	0	+5.2
St. Louis	814	0	+7.0	547	−0.7	+3.5
San Francisco	758	−0.6	+4.9	503	−0.9	+3.3
Seattle	785	0	+5.3	466	0	+4.0
U. S.—20 Cities' average	744	+0.04	+4.8	516	−0.2	+2.6
Montreal	584	0	+4.3	446	0	+2.1
Toronto	609	0	+2.4	472	+0.3	+2.5

How a Four-Man Crew laid 1500 feet a day of

CLOW Bell-Tite® pipe

through Florida swampland

CLOW cast iron pipe, with the sensational Bell-Tite joint, proved its advantages conclusively in this Clearwater, Florida, installation.

That a four-man crew was able to lay this CLOW Bell-Tite pipe at 1500 feet a day under these adverse conditions is definite evidence of the time, labor and money-saving advantages of this CLOW-designed joint. Two men worked in the trench—often in 3 feet of water. One man lubricating and aligning the joints, the other assembling with a pinch bar. A crane operator and a hook-up man completed the crew.

CLOW Bell-Tite forms a pressure-tight joint—instantly—no bolts or follower glands required. Under practically all conditions, it is the fastest, easiest and most economical pipe for water main installation. Underwriters' Laboratories Inc. listed in diameters 3- through 24-inch.

Shows simple assembly of CLOW Bell-Tite joint. Just wipe clean, lubricate and push spigot into the bell. When painted yellow stripe is no longer visible, joint is bottle tight.

Under-water assembly of 8" Bell-Tite pipe at Clearwater, Fla.
Contractor: Hancock Pipe Company, Clearwater, Fla.

JAMES B. CLOW & SONS, Inc.

CLOW 1878 ®

201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:
Eddy Valve Company, Waterford, New York
Iowa Valve Company, Oskaloosa, Iowa

Heat's On for Public Works "Quickies"

Less talk, more short-term public projects to halt recessionary trend is demanded of Administration

Pressure is continuing to mount from Democrats in Congress and from spokesmen outside of Washington for a step up in short-term public works spending to offset the business downturn.

President Eisenhower's formal statement on the economy last week has failed to still the voices of pessimism. Although the Administration took the occasion over the weekend to announce a brighter future for the housing industry, the demands for more than that continue to grow.

The situation, event by event:

• The President last Wednesday made a statement aimed at reviving business confidence, contending that unemployment should end its downturn in March, an indicator that the beginning of the end of the recession would be at hand. (January unemployment rose to 4.5 million, which was 1.1 million over December.)

March employment figures will be announced about mid-April, so the President pegged a date to watch.

• Postmaster General Summerfield went to Congress with a $2 billion postoffice modernization and construction program, based on the lease-rental and lease-purchase approach. The program this year would add somewhat to the approximately $700 million of government building under lease-purchase which the General Services Administration feels confident will be contracted for this year.

• Public and private housing starts for January, announced last week, showed an upturn from the long doldrums. January private starts were up to a seasonally adjusted rate of 1,030,000. Total January starts were 69,000, up from 62,000 in December.

• Over the weekend at Thomasville, Ga., President Eisenhower and Housing Administrator Albert Cole announced that applications for FHA mortgages last month rose 14%, to an annual rate of 261,000 units. That is a 64% increase over January a year ago, and 14% above last December.

• Vice Preisdent Nixon, in a speech at Phoenix, Ariz. on Saturday, pointed out that defense spending will increase in the year, estimating that contract awards the first half of this year will increase $5 billion over the last half of 1957. Best Pentagon estimates are that military construction contract awards will total around $2 billion this year.

These confident statements, however, are offset by growing warnings that more needs to be done.

• **Tax cut bills introduced**—The first bills have been introduced in Congress for a cut in individual and corporation taxes. Sen. Robert S. Kerr, of Oklahoma, influential member of the Senate Finance Committee, who will become chairman next year when Sen. Harry F. Byrd retires, is in favor of cutting taxes, increasing public works and easing credit as stimulants to the economy.

Senator Kerr is expected to assert his influence this year, even before he takes over as chairman.

Arthur F. Burns, former chairman of the President's Council of Economic Advisers, recommended that the new public works program should be concentrated on these projects that could be completed in the next six to nine months, when the impact on the business softness would be most effective.

Easier mortgage money for housing, and increases in spending on existing dam and highway programs would fit that pattern. Mr. Cole, incidentally, in his letter to the President, reported that FHA regional offices say that credit is easing around the country.

• **Public works under study**—Chairman Wright Patman, from Texas, of the Congressional Joint Economic Committee, this week is getting from Administration officials their public works plans to combat the recession.

The Administration's postoffice building program is its first step at pump-priming. The President said that the construction, long in the planning, was the right program to start now. It is roughly a $2 billion program, to be spent in the next two years. Republican Senate Leader William F. Knowland urges that the first funds be put in labor distress areas (where unemployment is 6% or more). The White House estimates that the construction would go into every state. A compilation of both postoffice and government building plans shows that projects ready to go total 146 at an estimated cost of $714.6 million.

Giants to Play at Home in '59

Construction is scheduled to start this month on an $11 million stadium for the San Francisco Giants, who are moving from New York this year.

According to Charles L. Harney, general contractor and one of the financial backers, the 45,000 person stadium will be completed in a year and ready for use before the 1959 big league baseball season. In the meantime, the team will play in Seal's stadium.

Some $5 million of the construction cost will be supplied by the City of San Francisco through a bond issue passed in 1954. The balance will be financed by Harney, Blythe & Co., San Francisco investment firm, and other investors. Repayment will be made to the city over a 35-year period from stadium revenue. Final papers regarding financial arrangements are expected to be signed within a week.

Architect is John S. Bolles, and consulting engineer, E. Elmore Hutchinson, both of San Francisco.

The stadium will have three decks. A lower tier seating 26,086 people will have 22 rows of box seats forward, and an equal number to the rear.

In the upper tier, there will be eight rows of box seats and 22 rows of general admission seats for 13,866 people.

The loge tier, between the upper and lower tiers, will seat 400 persons in the club, where there will be a restaurant and bar. Also on this level will be the press box and Giants' executive offices.

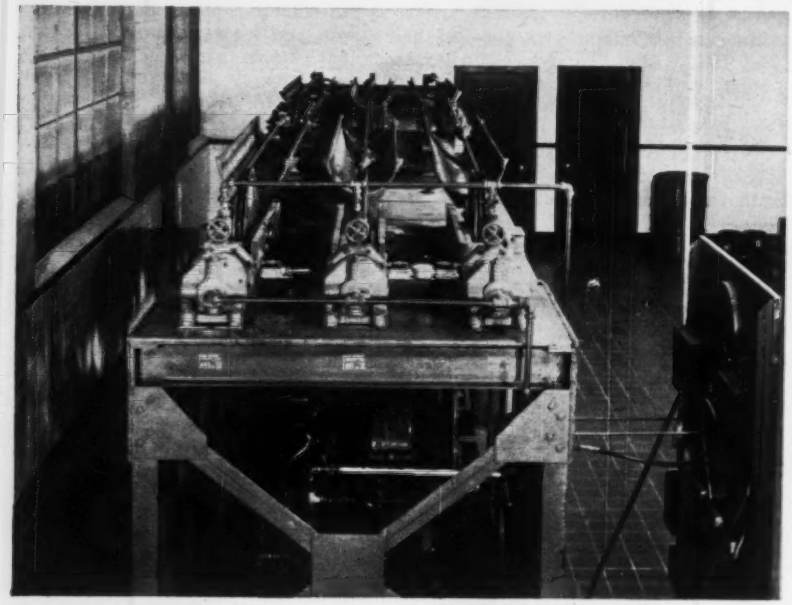
Total seating capacity of 45,000 for the baseball season includes 5,000 moveable bleacher seats adjacent to left and right field areas. During the football season, an additional 5,000 bleacher seats will be installed.

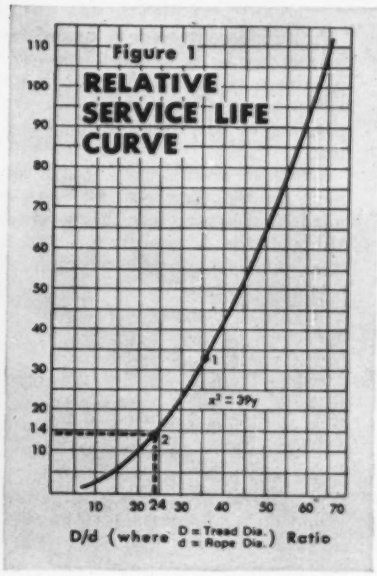
Size of the site is 17.7 acres.

The San Francisco Department of Public Works will build about $2.5 million worth of access roads and $1.2 million worth of sewers to serve the stadium.

(*B&F continued on page 112*)

Tuffy® Wire Rope





How Union Wire Rope Fatigue Tester Scientifically Predetermines Rope Life

How much service life can you expect from a given wire rope construction? Until recently there was very little factual data to answer that question. Predicting how long a certain wire rope would last under a given set of operating conditions was largely a matter of guesswork, trial-and-error and generally inexact calculations.

Knowing that bending stresses are a major factor in wire rope life, Union Wire Rope engineers designed the Accelerated Fatigue Tester, shown above, to pin down the effects of bending. Now, from a long series of bending tests, scientific data has been accumulated and organized to take the place of former rule-of-thumb methods.

"Preview" of Service Life You Can Expect

The data established by this laboratory research is based on the effects of various sheave diameters on bending stresses of various constructions of wire rope.

From test data, bending life curves have been plotted by Union Wire Rope Engineers for each of the more widely used rope constructions. Analysis of each of these curves showed them to follow a pattern expressed by the curve shown in Fig. 1 at right, above.

Note on Fig. 1 the curve shows that as the ratio of tread diameter to rope diameter increases (see D/d figures at bottom of chart) the longer the relative service life as expressed by the figures at the left of the chart.

However, there are few pieces of equipment on which sheave and drum sizes can be large enough to afford D/d ratios above 50. From test data the general-purpose range of D/d ratios was determined. Those recommended are set up in Table 3.

Spotted on the curve, for example, is the D/d ratio of 24 at point 2 and D/d ratio of 36 at point 1—these being the range for general purposes taken from Table 3 for the 6x25 filler rope. Moving from these points to the left on the chart, the relative service life of this rope ranges from 14 to 34 units of any service measure used, such as yards, tons, days, etc.

Table 2

BENDING-LIFE FACTORS

When Using Curve of 6x25 FW

CONSTRUCTION	FACTOR
6x7	0.57
18x7	0.67
6x17 Seale	0.73
6x19 Seale	0.80
6x21 Filler Wire	0.92
6x25 Filler Wire	1.00
6x31	1.00
8x19 Seale	1.14
6x37	1.33
8x19 Warrington	1.33
Tiller Rope	2.00

Table 3

SHEAVE DIAMETER FACTORS

ROPE CONSTRUCTION	GENERAL PURPOSE RANGE D/d Ratios	Where D = Tread Dia. d = Rope Dia.
6x7	63	42
18x7	54	36
6x17 Seale	49	33
6x19 Seale	45	30
6x21 Filler Wire	39	26
6x25 Filler Wire	36	24
6x31	33	22
8x19 Seale	31	21
6x37	27	18
8x19 Warrington	27	18
Tiller Rope	18	12

Tips

Now to determine the relative service life of say a 6x37. Its bending life factor (see Table 2) is 1.33 as compared to 1.00 for the 6x25 filler wire. Multiply the service life readings of 14 and 25 for the 6x25 filler wire by 1.33, and we find the service life range of the 6x37 falls at 18 and 27 units of service. Relative service life of other ropes are determined in the same way by using the bending factor indicated for each as the multiplier.

Of course bending is not the only wear factor in wire rope operation. Hence the general rule—that more flexible ropes should be used as bending stress increases with decrease in diameter of sheave or drum—has to be modified in field use. Other principal operating conditions—in addition to bending stresses—that affect wire rope service life are loading conditions, portability, corrosion, abrasion, rope speeds, materials handled, and equipment design. You can get further information on all wear factors from your Union Wire Rope distributor or the Union Wire Rope Corporation engineering staff.

Ordering is ABC-Simple!

No complicated codes or long list of specifications. Just say "Tuffy", give type (Scraper Rope, Dozer Rope, etc.), length wanted and size. Just that easy!

Good Man to Know: Your Nearby Union Wire Rope Distributor

Whether your wire rope need is a scheduled replacement or a red-hot emergency, your Union Wire Rope distributor is ready with "right-now" service. He keeps varied stocks of Union standard constructions and the Tuffy Special Purpose Ropes. And he's backed by quick service from his nearby Union Wire Rope depot.

If it isn't rope you need, but advice on a wire rope problem, he's just as ready to help. If you don't know your Union Wire Rope distributor already, look under "Wire Ropes" or "Slings" in your telephone directory yellow pages.

Excessive strength can make a rope "muscle-bound"... Wire Rope must be

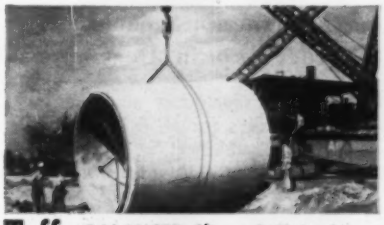
BALANCED

Buying wire rope on the basis of strength alone leaves other important properties out of consideration. Wire rope, like athletes, can be "muscle-bound" with too much strength.

Strength is not always the answer to the question of the proper rope to use. Strength does not increase flexibility, resistance to crushing, abrasive or fatigue-resistant qualities. Strength does not compensate for the core crushing which accompanies excessive loading.

The Tuffy ropes are engineered for each end-use of the different types of rope. The combination of strength, toughness and flexibility is different for each application. The way to be sure your rope is BALANCED for its job is to use Union Wire Rope. Get in touch with your Union distributor.

Tuffy Special Purpose Ropes: tailored and BALANCED for special uses



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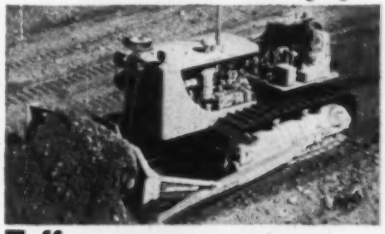
Tuffy BALANCED Scraper Rope

It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Moves more yardage per foot because it's specially built and balanced to take the beating of drum-crushing abuse.



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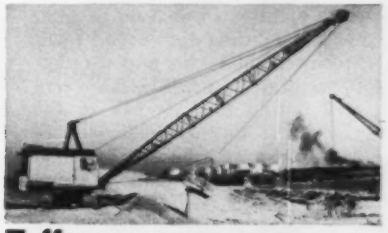

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Machinery Men See Big 1958

New orders for construction equipment expected to increase 14% this year to surpass peak of 1956

Construction machinery manufacturers are expressing new optimism. They are now predicting that the downturn in new orders that had been experienced in 1957 will be reversed this year, with the over-all increase topping the one month upturn recorded for December 1957, by a substantial amount.

The new orders index for construction and mining machinery should rise 14% in 1958 to 261, based on 1949 = 100. The anticipated value compares with the 1957 index of 229 and the previous record high of 252 established in 1956.

This forecast of orders for 1958 is by the McGraw-Hill Department of Economics, which computes the monthly new orders index on the basis of reports by a sample of companies in the machinery industry.

These firms have projected their 1958 new orders on a quarter-by-quarter basis, and the outlook for the year is shown in the following table.

New Orders for Construction and Mining Machinery

1949 = 100	1958	1957	1956
Quarter	Forecast	Actual	Actual
Jan-Mar	221	264	252
Apr-Jun	274	229	261
Jul-Sept	277	230	241
Oct-Dec	273	192	252
Full Year	261	229	252

McGraw-Hill Dept. of Economics

• **Slow first quarter**—Although new orders are expected to run well below both 1956 and 1957 during this year's first three months, an increase of 24% is anticipated during the second quarter. Moreover, the higher rate of orders in the second quarter will be fairly well sustained during the last half of the year, according to the predictions of the manufacturers. Thus, the total value of new orders this year is expected to set a new record high.

But whether the forecast will be supported by actual orders depends greatly on the trend in heavy construction contracts. ENR predicted that awards this year will come within 2% of 1957's total (ENR Feb. 13, p. 49). This indicates that orders for construction machinery may not get much of a lift—if any—from heavy construction contractors.

• **Prices up in January**—The machinery price front during last December was rather quiet. The silence was ended in January with scattered boosts. The U. S. Bureau of Labor Index of Manufacturers' Prices edged up as a result of the hikes to a new high of 165.4 on January 15, based on average prices in 1947–1949 = 100.

Although this is only an increase of 0.1% over the December 1957 value, the prices of some types of equipment were upped 4% or more. For example: paving mixer, 34 cu ft, 4.5 %; bituminous distributor, 5.6%; and dewatering pump, 90m gph, 5%.

Subindexes for concrete mixing machines also moved higher with increases posted of more than 1% for smaller portable mixers and truck mixers.

Climbing Again

Construction machinery orders up in December

Construction machinery manufacturers received orders for 10% more dollars' worth of machinery in December than in November, according to the McGraw-Hill Department of Economics index. The figure is based on reports from a sample of firms in the industry.

This rise marked the end—at least temporarily—of a four months decline in orders for construction machinery. The December index is at 198, based on 1949 = 100, compared to the revised value of 180 that was recorded for November 1957.

Although orders in December of 1957 were 16% under the same month of 1956, they were extremely close to the volume ordered in December 1955 and they topped the December 1954 index.

For the full year 1957, machinery orders were second only to that of 1956 when a record was established. The orders index for 1957 averaged 229, off 9% from the 1956 average of 252. However, the second half of last year saw orders drop 14% under the July-December period of 1956. In addition, the order volume for the last six months of 1957 was 3% below the same period of 1955.

The decline in machinery orders during 1957 followed closely the trend in heavy construction contract awards as reported by ENR. Contract awards fell 17% under the 1956 record and they were 4% below 1955's total.

As the new year got under way, the heavy construction contract trend pulled out of its slump with a slight rise in January. The awards index for this month is 160, based on 1949 = 100, compared with a 45 month low of 154 in December 1957.

Agency Moves Again to Encourage Home Loans

A governmental agency has moved a second time within one month to give the home mortgage market a boost. The Federal National Mortgage Association (Fannie Mae) last week raised by 1½% the price it will pay for VA-insured 4½% home mortgages and also lowered its marketing and purchasing fee from one percentage point to one-half percentage point on both VA-guaranteed and FHA-insured mortgages. These actions follow a one-half percentage point boost in mortgage purchase prices the agency announced in January (ENR Jan. 16, p. 109).

Fannie Mae, which operates in the secondary mortgage market, now will pay from $91 to $93 for each $100 of FHA and VA mortgage debt bought from the nation's lending institutions. The buying price varies by area and also by the amount of the homeowner's equity in the mortgage.

Although the purchase price for FHA mortgages carrying a 5% or 5¼% interest rate has not been increased in the last move by Fannie Mae, the reduction of the fee charges has the same practical effect when these mortgages are sold to the agency.

By increasing the price it will pay for existing mortgages, it is hoped that lending institutions will be encouraged to sell some of their mortgage debt in order to obtain cash which could then be used to finance housing for those families wanting to become homeowners. In effect, the move is one that can supply more cash to lending institutions for new investment.

Chain Belt Acquires All Rights to Formless Paver

Chain Belt Co. of Milwaukee has acquired the design and rights to manufacture and sell the Quad-City slip form paver from the owner, Quad-City Construction Co. of Rock Island, Ill. Terms of the acquisition were not disclosed, but it was reported that Chain Belt exercised an option taken two years ago.

Chain Belt officials said that the machine represents the first new concrete paving method in 30 years, and

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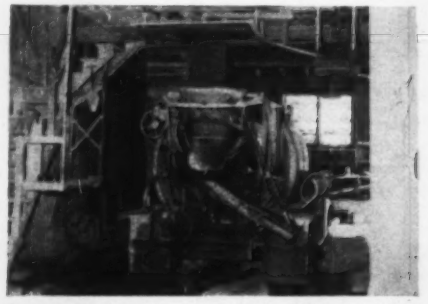

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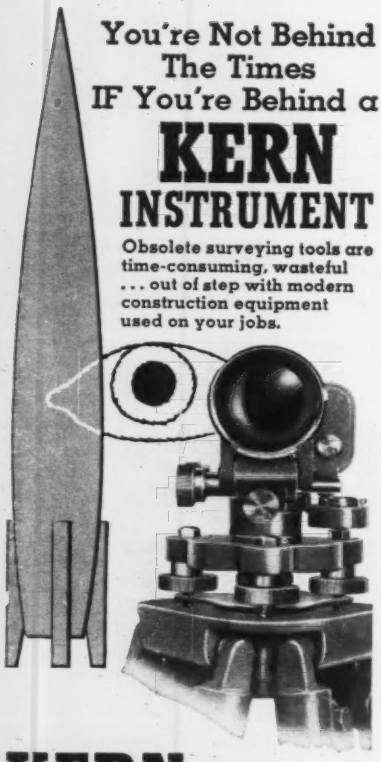

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A Chain Belt spokesman said the machine can save from $5,000 to $8,000 a mile on the cost of concrete highway depending on the width and thickness. However, the machine cannot be used where steel mesh reinforcement is required. Chain Belt engineers are now trying to remove that handicap.

Commercial Development Bids to Be Opened Feb. 27

Bids for the Lloyd Shopping Center in Portland, Ore., will be opened February 27. Plans and specifications have been distributed to 17 general contractors. The project's structures alone will cost an estimated $25 million. For bidding purposes the center has been divided into four sections:

A five-level department store for Meier and Frank, two multi-tenant buildings, a restaurant, and a 76 x 176 ft covered ice-skating rink.

A three-level J. C. Penny and Woolworth building, and two adjacent two-level multi-tenant buildings.

A three-level J. J. Newberry building, two buildings of three levels, and two two-level buildings.

A Safeway Stores supermarket.

Structures will be of reinforced concrete with exterior facing in a variety of materials. Plans are being issued by John Graham & Co., Seattle architects and engineers.

Not Bad After All

Four construction firms set earnings record in '57; one equals '56 peak

Five major companies in the construction industry have reported record or near record earnings for 1957.

Preliminary figures of Arthur G. McKee indicate that net profit for the year was $3.3 million, which compares with $2 million net in 1956. Furthermore, H. R. Moorhouse, executive vice president and treasurer, said, "The backlog of business on January 1, 1958, based on anticipated billings, was substantially the same as the beginning of 1957."

Record earnings were achieved by Utah Construction Co. in the fiscal year ended October 31, 1957. When combined with a share of the profits of subsidiaries and affiliates, earnings reached $5.4 million, the largest figure in Utah's 57 year history. Though its backlog of heavy construction contracts was down at the end of 1957, company officials said commitments were sufficient to sustain a "high volume of work through the better part of 1958."

Sales and earnings of the Fluor Corp., Ltd., also reached record levels during 1957, the company's annual report states. Consolidated net sales, at $152.4 million, were 26% over the 1956 figure, $120.8 million. Earnings were $2.6 million, compared with $736,550 in 1956. The major part of Fluor's revenue came from the sale of engineering and construction services to the petroluem, petrochemical and electric power industries. Since November 1, 1949, sales of this type have jumped from $18.5 million to $122.5 million and now represent 80% of total sales, the report said. Sales of manufacturer products rose from $5.3 million to $16.7 million in the same period. The Engineering-Construction Division ended the year with a backlog of $122 million in orders.

Merritt-Chapman & Scott Corp. reports that its 1957 net, when fully audited, will "approximately equal" the $12.8 million net of the record 1956 year. The company's consolidated backlog "now stands at approximately $663 million, compared with $527 million a year ago," Louis E. Wolfson, president and board chairman, said. Included are $315 million in construction projects, $257 million in shipbuilding, and $70 million in long-term ferro alloys contracts.

For the fourth consecutive year net income of Raymond Concrete Pile Co. was at record levels, the company announced recently. Including domestic subsidiaries, Raymond's net income for 1957 was 5.3 million, compared with $4.4 million in 1956. In its first public disclosure of sales volume, Raymond reported that "slightly more than $150 million" in work was completed during 1957. In the fourth quarter $148 million in new contracts was received, as against $117 million in 1956. The backlog at the beginning of 1958 is about the same as a year ago, the company continued, though the outlook for 1958 is "not as favorable as it was at the beginning of 1957."

Union Carbide Halts Work On $14.1 Million Project

Construction will be deferred on the $14.1 million office and research facility Union Carbide Corp. is building at Greenburg, N.Y., the company announced last week. When asked whether the move was a reaction to the general business decline, a spokesman insisted that construction was merely being deferred to permit the company to "review its current programs." It is a temporary action, he continued, but he would give no indication when

Pittsburgh's X-L-O STRUCTURAL STEEL PRIMER

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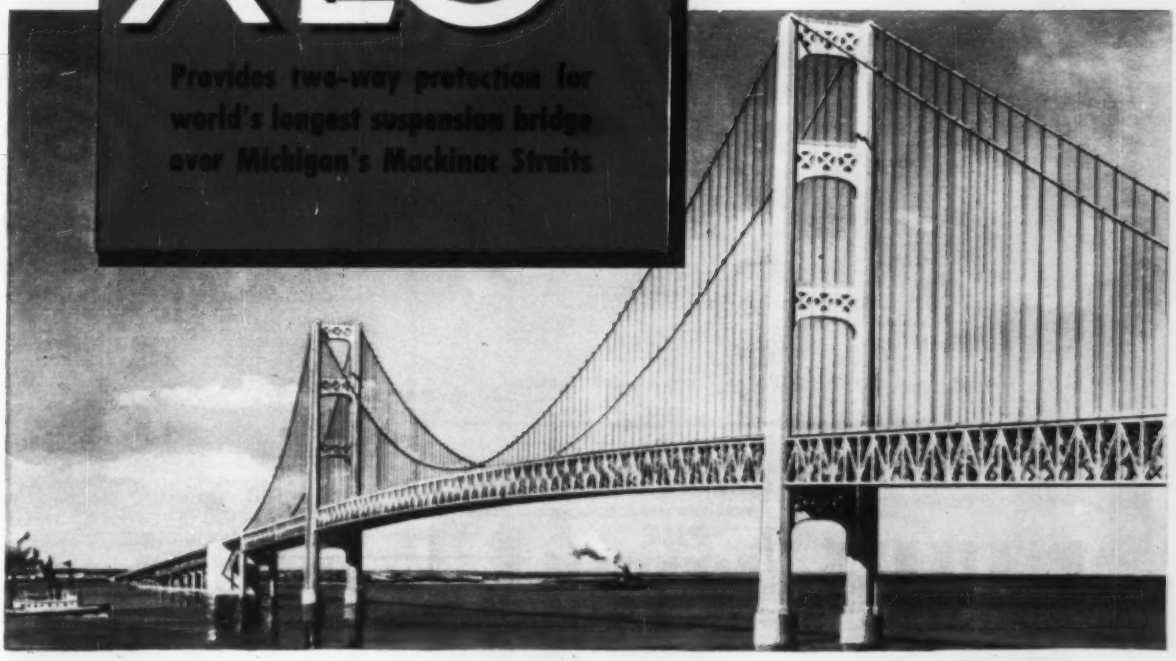

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2. Makes an excellent foundation for field painting

A **70-YEAR** dream come true! That's the new five-mile bridge recently completed to link Michigan's upper and lower peninsulas. This huge project was designed by Dr. D. B. Steinman. The American Bridge Division, United States Steel Corporation, fabricated the 75,000 tons of structural steel for its superstructure and major portions of the foundation caissons and cofferdams.

This giant project features a suspension bridge with a center span of 3,800 feet, two 1,800-foot side spans, and two 472-foot unloaded backstay spans. Total length, including anchorages, is 8,614 feet, making it the world's longest suspension bridge.

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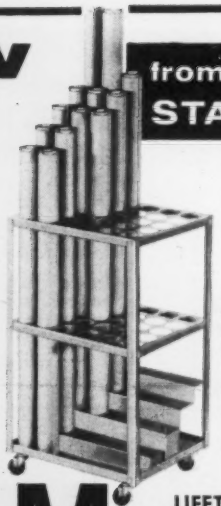

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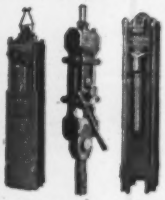

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building would be resumed. Grading, excavation and foundation work have been completed, and the facility was scheduled to open in mid-1959.

The stop-work order did not affect construction in progress on Union Carbide's Nuclear Research Center at Tuxedo Park, N.Y. In addition, the subsidiary, Union Carbide Chemical Co., has not changed its plans for a $10 million polyethylene plant at Whiting, Ind., first announced last fall. A contract for construction was awarded to Morrison Construction Co., Hammond, and made public almost simultaneously with word of the Greenburg cutback from the parent company.

Walsh Construction Co., New York, has the contract for the Greenburg research facility.

Contract Building Firms Drop First Time Since War

The number of contract construction firms doing business at the close of the 12 month period ending June 1957 dropped by 5,000 to a total of 478,000, according to figures released by the U.S. Department of Commerce.

Although the 1% decline was probably too small to be noticed by competitors, it was the first year-to-year drop recorded since the end of World War II.

The department said the construction industry had the largest relative decline in the number of firms operating during the war when private construction was severely restricted. In contrast, the industry made greater than average gains in the postwar reconversion period, and was the one least affected by the recessionary influences of 1948-49 and 1954-55.

The construction industry apparently lost some of its appeal in 1957 because the number of firms increased by only 1,000 from December 1956, to June 1957. But in the same period of the 1956 construction boom year, the number of new firms jumped by 11,100. In fact, there were only 58,300 new firms organized in the 12 months period ending June 1957, as against 71,000 during the same period ending June 1956. This is a decline of 18%.

In addition, the number of contract construction firms throwing in the sponge rose to 63,000 for the 12 months ending June 1957, as compared with 53,700 going out of business in the preceding year. This represents an increase of 17%.

The number of businesses transferred by purchase, or otherwise, declined only slightly from 12,700 to 12,500 for the 12 month periods ending June 1956, and 1957, respectively.

On A California Freeway—

these two 82′10″ bridges built in one week

Massachusetts Avenue Bridge, Lemon Grove, San Diego County. Designed by: The State of California, Bridge Department, Division of Highways; General Contractor: Guy F. Atkinson Co., Long Beach, Calif.

THE TIME SAVED in building these parallel highway bridges was but one of the advantages gained through the use of fabricated structural steel.

Besides time, steel construction also saves weight, reducing freight and man-power costs considerably, and eliminating a lot of handling headaches.

When you build with steel, plans made on paper work out in practice. The characteristics of quality-controlled fabricated structural steel do not vary. They are unaffected by temperature extremes. And because structural steel members are strong and tough, they require no special handling in the field.

Steel is still the best buy—here's why!

1. GREATER STRENGTH—Steel is the strongest and toughest construction material. It permits long, clear spans. It can absorb abnormal impacts and loads. It's safe and sound.

2. FAST ERECTION—Steel goes up fast. It fits precisely. And only steel gives you the advantages of bolted, riveted or welded connections.

3. EASY ALTERATION—Steel structures can be readily altered during or after construction.

4. EASE OF SHIPPING, HANDLING AND STORAGE—Steel can take rough handling. It minimizes bulk and weight in shipment. It can be stored compactly.

5. ACCURATE INSPECTION—The condition of a steel structure is easy to check, during or after construction.

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AFL-CIO Gains Greater Labor Unity

Threatened inter-union war in construction trades temporarily ended by softer approach to key issues

The union racketeering repercussions that threatened inter-union war in the construction industry are ended—at least for the time being.

Last week, there were two key moves by union officials that almost assure that the split in labor over corruption and clean-up moves won't extend to the local project level. The anticipated aftereffects are being gingerly avoided.

At three of labor's mid-winter meetings in Miami Beach, these decisions were made:

• Leaders of the AFL-CIO and the union it has expelled, the International Brotherhood of Teamsters, decided at separate conferences that they would not go to the mat with each other, but would exist as peacefully as possible as separate labor organizations. The split at the top won't be pushed down the line.

• The International Union of Operating Engineers, under new president Joseph Delaney, is embarking on a clean-up campaign of its own that's expected to give it eventually a clean bill of health decree from the AFL-CIO. The federation's racket investigation of the engineers will continue, but the outcome is already clear—no expulsion.

These decisions are significant to contractors. For one thing, the teamsters won't be battling their old friends in the AFL-CIO Building Trades Department, even though they were ousted from that organization in a follow-up of the teamsters' expulsion from the federation last December. Instead, the alliances that existed when the unions were all together in the same house will continue.

• **No change**—This means no change in the seven mutual aid pacts the teamsters hold with AFL-CIO unions. And the trucking union, under its new president James R. Hoffa, specifically renewed its organizing, bargaining and mutual defense pact in heavy construction and roadbuilding with three other unions—the carpenters, operating engineers and laborers.

Too, the teamsters won't be faced with any new trucking union. The AFL-CIO Executive Council voted, despite the contrary opinion of AFL-CIO President George Meany, not to charter any new trucking local that would lead to a rival union against the teamsters. This meant that 10 teamsters locals that had sought affiliation with the AFL-CIO won't be welcome—any clean-up efforts they want to make must be handled within the teamsters union.

Mr. Meany's position was to fight the teamsters down the line. However, other powerful union leaders, including Walter Reuther of the United Auto Workers, George Harrison of the railway clerks, and machinists' president Al J. Hayes, head of the AFL-CIO Ethical Practices Committee which led the teamster ouster, all favored slowing down at this point. They won the argument that to charter new locals or a new international union would mean a union battle with the teamsters that both sides could only lose.

And the teamsters' Mr. Hoffa was happy to go along. At the first full session of the teamster Executive Board under his control, the embattled union president said this was the way he wanted it: "Nothing is being changed."

The AFL-CIO and teamsters meetings were held 10 miles apart on Miami Beach and no contract was made between the two organizations. The idea is go along their separate ways and while the teamsters won't be part of the Building Trades Department, they'll still be working closely with its separate members, both through formal working pacts and on the job.

• **The engineers' reprieve**—With the resignation of William E. Maloney from the helm of the operating engineers union, the main threat to its corruption troubles was removed. Mr. Maloney was the chief target of the McClellan rackets investigating committee, and probably still will be called to task before the committee when it resumes hearings into the union.

The 77-year-old Mr. Maloney, who gave poor health as his reason for stepping down, was to be officially succeeded, at the end of the week, by Mr. Delaney, the union's secretary-treasurer. And slated to move into Mr. Delaney's old post was engineers' vice president Hunter Wharton.

Mr. Delaney has promised, as a first clean-up step, to start winding up trusteeships in the union which now, according to evidence before the McClellan committee, cover some 50,000 out of the union's 284,000 membership. Under the trusteeship system, the international controls the local and its members have no voice in the local's affairs—a system Senator McClellan has charged as undemocratic.

As an added assurance that the operating engineers will begin to eliminate some of the suspect operations is the relationship between Mr. Meany and Mr. Delaney. They are long-time personal friends and Mr. Delaney has assured Mr. Meany that he supports all the AFL-CIO Ethical Practices Codes and will move to see his union complies.

This should end what might have been another rupture within the AFL-CIO. When the operating engineers troubles first came to light, they threatened a repeat of the teamsters case, and an expelled operating engineers union could have led to a major defection of the construction unions from the AFL-CIO.

Instead, the building trades, without the teamsters, are closer than ever to the parent federation. In part, this is because the absent teamsters aren't on hand to promote their traditional opposition to President Meany's program within the AFL-CIO.

One concrete result of the trucking union's absence is the building trades agreement with the AFL-CIO's Industrial Union Department (ENR Feb. 13, p. 41). That agreement may end jurisdictional scrapping over building work in industrial plants.

• **New clean-up campaign**—This theme of more unity without the teamsters showed up, too, in the AFL-CIO's extension of its anti-corruption campaign. The Executive Council, at the Miami Beach sessions, issued orders to all AFL-CIO affiliates to comply with the Ethical Practices Codes by April 15—or explain why this isn't being done.

Particular attention was pointed to the code of democratic procedures, which includes periodic voting for officers, honest elections and the right of individual union members to speak their views about the union. Essentially, the council's move here is designed to forestall any corrective legislation by Congress, since the democratic procedures go to the heart of the Eisen-

hower Administration's Taft-Hartley amendment proposals.

This anti-racketeering theme is being carried on by the teamsters, too. Mr. Hoffa, whose election to the teamster presidency was the main reason for the truck union's ouster from the AFL-CIO, is taking his own anti-corruption steps in the hope of being invited eventually to return to the federation.

Mr. Hoffa also began the clean-up by an assault on trusteeships in the teamsters union. According to his figures, out of 107 teamster locals run by trustees last October, 37 have since been ended, 15 are now electing their own officers and 27 others are being investigated. Of the 13 locals over which Mr. Hoffa has served as trustee, he says three have been terminated.

In addition, the teamster Executive Board's Miami conferences brought out a conflict-of-interest move which orders all truck union officers to divest themselves of business interests directly related to their union activities. Under this directive, Mr. Hoffa must close down the Hobren Co. of Detroit, a holding company in which his wife has a major interest.

Part of the teamster leaders' action is to comply with directives from the federal court that opened the way to Mr. Hoffa's succession to the head of the trucking union. Under a court settlement pact with 13 rank-and-file teamsters, they agreed to withdraw their suit against Mr. Hoffa's taking office in exchange for certain corrective actions along with a three-man board of monitors to oversee the teamsters operations. The monitors began their duties at the teamsters' Miami meetings.

"Right-to-Work" Title Becomes a State Issue

The nation's first court test of the phrase "right-to-work" as a proper title for laws banning the union shop may occur in Colorado.

A dispute has arisen between the secretary of state and sponsors of a right-to-work constitutional amendment over the title of the amendment proposed for the November ballot.

Organized labor has long contended that "right-to-work" is a misnomer. They claim that it is a purposely misleading phrase that wins supporters with all the effectiveness of false advertising. The laws do not purport to guarantee anyone the right to work and merely provide against discharge of employees for refusing to join a union or for joining a union.

In the Colorado dispute, the secretary of state has rejected the phrase "right-to-work" and the words "freedom to work" as part of the descriptive title of the proposed amendment.

Title proposed by state officials is this: "An act to amend Article II of the state constitution by adding a new section thereto providing that membership or nonmembership in any labor union or labor organization shall not be cause for denying employment to any person. And providing that no contract, agreement or understanding shall be entered into that requires membership or nonmembership in any such union or organzation as a condition of employment."

Sponsors of the amendment say they will appeal the secretary of state's decision to the State Supreme Court if he insists upon using this title.

Compulsory Union Merger For Michigan Labor Units

The first compulsory merger of AFL and CIO forces at the state level is to occur in Michigan on February 24.

Because of a deadlock in state merger negotiations, the AFL-CIO has revoked the charters of the Michigan State Federation of Labor and the State Industrial Union Council. A new Michigan State AFL-CIO has been chartered.

In announcing the AFL-CIO's intervention, federation president George Meany said he was "quite sure the teamsters union was the main factor in blocking" a voluntary merger. But the merger committee of the state AFL has accused Mr. Meany of trying to destroy the authority and autonomy of international unions and claims that jurisdictional conflicts with industrial unions in 10 areas of the state still remain to be discussed and resolved.

All state AFL and CIO local unions in good standing will be eligible to participate in the Michigan merger convention on payment of March dues.

Mr. Meany has indicated that state AFL and CIO bodies will be forced to merge as in Michigan only where there appears to be no possibility of voluntary merger. Other states where such action may be necessary are New Jersey and Rhode Island.

Minimum Wage Protection In Construction Industry

The AFL-CIO, which is pressing for broader minimum wage protection, estimates that 1,950,000 construction workers are not covered by the Fair Labor Standards Act.

Where it applies, the law requires payment of at least $1 an hour as a minimum wage and overtime at the rate of time and one half for work in excess of 40 hours a week. Workers covered by the law are those "engaged in commerce or in the production of goods for commerce" unless specifically exempted.

Labor is urging Congress to enact the Morse-Kelley bill which would extend coverage to another 9½ million workers —1,400,000 of whom are in construction. (These are largely unorganized workers not covered by the law because their work is not in interstate commerce as now defined. Many may be receiving the minimum wage but not the overtime protection.)

Since the law first took effect in 1939, its coverage has been narrowed by restrictive definitions of "interstate commerce" and by additions to specific exemptions.

The Morse-Kelley bill would broaden basic coverage of the law and reduce or eliminate some of the existing exemptions such as those relating to farming and to retail and service industries.

"Interstate" Picketing And Right-to-Work Laws

Two AFL-CIO building trades unions have successfully challenged the efficacy of North Carolina's right-to-work law.

The State Supreme Court has ruled that the law is not enforceable by state courts when applied to union activities in an industry engaged in interstate commerce.

The decision set aside a lower court injunction against picketing of a construction project at the Douglas Aircraft Company missile plant at Charlotte. Picket lines had been set up by the electrical workers and iron workers unions to protest use of nonunion workers by a subcontractor on the project.

Douglas contended picketing to force employment of union members violated the right-to-work law and an injunction was obtained in a state court. (The law declares that no person may be required to join a labor union as a condition of employment).

In setting aside the injunction, the state's high court said that the lower court "was without the authority to issue the restraining order". It based its decision on a U. S. Supreme Court ruling that denies state courts the right to handle labor cases involving interstate commerce.

(*Labor continued on page 120*)

Toward Labor Unity

Dallas Council reunites; trades aim at efficiency

A nation-wide effort on the part of the AFL-CIO building trades unions to build a more solid and effective front at the local level has already reflected itself in Dallas.

After seven years of absence, the 3,000-member Local 198 of the carpenters union has rejoined the Dallas Building and Construction Trades Council. Electrical workers—only one of the building trades still outside the council—are expected to come in within the next few months.

The strength of unity thus achieved is viewed by labor as an effective step against open shop situations existing under the Texas right-to-work law and as the forerunner of more harmonious labor-management relations.

Two major goals have been announced by the revitalized council:

- Formation of a permanent joint committee of contractors and union leaders to meet monthly. One of the aims will be reduction or elimination of jurisdictional disputes.
- Sponsoring of a safety school this spring for building tradesmen.

On the national level, the AFL-CIO Building and Construction Trades Department has appointed seven regional directors (ENR Dec. 26, 1957, p. 80) to assist the department in its efforts to improve the strength and efficiency of local councils. The councils are considered one of the keys to effective membership drives and to successful opposition to antiunion legislation and practices.

Contractors Lend Support In Jurisdictional Hassle

A joint construction activities committee has been formed in Detroit, Mich.

Its purpose is to publicize and fight restrictive clauses in industrial union contracts prohibiting outside contractors from doing construction work in plants where the industrial unions have production contracts.

The committee was established earlier this month when representatives of nine associations of building and specialty contractors met with the executive board of the Detroit Building and Construction Trades Council.

The action is the first outward evidence that contractors and craft unions in the Detroit area are joining forces to protect their common interests in the jurisdictional conflict that has plagued the AFL-CIO since the labor merger.

OFFICIAL PROPOSALS

Bids: March 25, 1958.

City of Fond du Lac, Wisconsin Water Works Improvements

Sealed Proposals for the construction of Water Works Improvements will be received by the City of Fond du Lac, Wisconsin, until 10:00 A.M. (Central Standard Time) on the 25th day of March, 1958, at the office of the City Clerk in the City Hall, Fond du Lac, Wisconsin.

Copies of documents including plans and specifications required for review or bidding purposes may be obtained only from the City Clerk by depositing $80.00 for Division A, and $35.00 for combined Divisions B and C, with the City Clerk for each set of documents so obtained.

Those who have submitted a formal bid will receive a refund of the deposit for one set, and one-half refund for sets in excess of one, returned within ten (10) days after opening. Those who have not submitted a formal bid will receive one-half refund for all sets returned in good condition within said ten (10) day period.

A certified check or cashier's check drawn on a solvent bank or a bidder's bond, payable without condition to the City of Fond du Lac, Wisconsin, in an amount not less than five percent (5%) of the bid, shall be submitted with each proposal as a guarantee that if the proposal is accepted a contract will be entered into and the performance of the contract properly secured.

No bid shall be withdrawn after the opening of proposals without the consent of the City of Fond du Lac for a period of sixty (60) days after the scheduled time of closing bids.

Award of contracts for this project will be made subject to the requirements of the State of Wisconsin Statute Section 66.29. The form of questionnaire to show "Bidder's Proof of Responsibility" is on file and may be obtained at the City Clerk's office. Such "Bidder's Proof of Responsibility" form must be filed with the office of the City Clerk not less than five (5) days prior to the time set for opening bids, and must show sufficient financial ability, equipment and experience to properly perform the contract. Bidders can obtain contract documents, plans and specifications only after such form has been accepted by the City.

The City reserves the right to accept any proposal on any one Division or Section or combination of Sections which is deemed most favorable to the City.

Proposals are solicited for three separate Divisions of the proposed Water Works Improvements, as follows, and bidders may submit a proposal on each Section, Division, or any combination of Sections and Divisions:

Division A—Raw Water Pumping Station, Water Treatment Plant, and Existing Pumping Station Improvements

Includes raw water pump station; a water treatment plant comprising aerating basins, solids-contact upflow chemical treatment basins, conventional chemical treatment and settling basins, chemical storage and feeding facilities, rapid sand filters, clear well, chlorinating facilities, treated water pumps with related structures, piping, valves, meters, appurtenances, electrical work, plumbing, heating, and ventilating work; and additional pump and improvement to existing pumping stations.

The improvements to be constructed under Division A are divided into five (5) separate Sections, as follows:

SECTION I General Construction
SECTION II Equipment and Process Piping
SECTION III Electrical
SECTION IV Plumbing
SECTION V Space Heating and Ventilation

Division B—Lake Intake Line and Intake Structure

Includes lake intake structure and 2,190 feet of 36 inch diameter pipe intake line.

Division C—Water Transmission Mains

Includes 20,000 feet of 24 inch raw water pipe line, 9,800 feet of 24 inch and 600 feet of 10 inch treated water lines.

Plans and Specifications for this project were prepared by Consoer, Townsend and Associates, Consulting Engineers, 360 East Grand Avenue, Chicago 11, Illinois.

Dated at Fond du Lac, Wisconsin this 18th day of February, 1958.

CITY OF FOND DU LAC, WISCONSIN
By C. J. Ondrasek
City Clerk

Bids: February 27, 1958

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 27th day of February 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 1, L. G. Nickerson, District Engineer, 353 Broadway, Albany 1, New York		
Albany & Rensselaer	TABS 58-1	New York State Thruway—Berkshire Section, Subdivision B-1, Hudson River Bridge and approaches

Miles	Type	Deposit	Estimated Cost of Work
1.05	Reinforced Concrete Pavement of Bridge Deck	$60,000 Plans $5	$1,103,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5025) will be received at Vernal, Utah, until 10 a.m. Mountain Standard Time, March 20, 1958, for furnishing labor and materials for Surfacing Access Road Station 0+00 Station 420; Constructing Access Road Station 815+40 to Dam; Constructing Powerplant Service Road, Flaming Gorge Dam, Colorado River Storage Project, Utah-Wyoming. Location near Linwood, Utah. Principal items are 21,700 tons crushed rock base; 424,000 cu. yds. excavation; 330 tons liquid asphalt; and other work. Completion time 420 days. For particulars, address Bureau of Reclamation, Vernal, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

READ THE OFFICIAL PROPOSAL COLUMN OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: March 13, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 13th day of March 1958, by Henry A. Cohen, Director Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie	FINTC 58-1	Interstate Route 506-N. Y. S. Thruway	0.48	9" Cem. Conc. Pavt. 2 @ 24' Wide 0.67	$350,000	$6,333,000
	NTC 58-2	Niagara Section-Subdivision N-6, Part 2 (Porter Ave.-Ontario St.) Project I-865(16)	(0.30) (Acc.)	Asph. Conc. Pavt. = 0.07 Mi. Misc. Work = 0.04 Mi. Including Reinf. Conc. App. Struct. 520.8' Reinf. Conc. Depressed Struct. 1313.4' Pedestrian Overpass-W. F. Beam 83.8' Span	Plans $20	
DISTRICT No. 6, J. H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Tioga	FASS 58-3	Owego-Nichols, C. R. 602 Project S-87(2)	0.30	Asphalt Conc. = 0.30 Mi. Prestressed Beam Bridge 2 Spans Total 100.5'	$7,500 Plans $2	$135,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland	TAGS 58-1	N. Y. S. Thruway-Hudson Sect.-Subd. 8A Connection to Garden State Parkway (Grotke Road)	0.03	Miscellaneous Work = 0.03 Mi. Including Bridge-Triple Reinf. Conc. Box 38' Total	$1,700 Plans $2	$31,000
Ulster	FESS 58-5	West Shokan-Peekamoose-Sundown Road, C. R. 139 Project ER-77(2)	0.10	Bit. Macadam Pavt. = 0.10 Mi. Including Comp. I Beam Bridge 61' Span	$6,500 Plans $2	$117,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	NSPRC 58-1	Northern State Parkway (Contract 2) (Long Island Expressway to Hillside Avenue)	2.07	Widening & Resurfacing Cem. Conc. Pavt. with Carbon Black 2 @ 48' Var. 1.12 Mi. Asph. Conc. Pavt. = 0.87 Mi. Misc. Work = 0.08 Mi. Including Lengthening H. G. S. (Willets Road) Reinf. Conc. Arch 65.3'	$90,000 Plans $3	$1,660,000
Bronx	FICBE 58-2	Cross Bronx Expressway, Cont. 6, (Clay Avenue to Fulton Avenue) and Various Cross Streets and Service Roads. Project I-U-1084(30)	0.45 (0.74 Acc.)	9" Cem. Conc. Pavt. with Carbon Black; 2 @ 39' Var. Width . . . = 0.38 Mi.; Sheet Asphalt Pavt. . . . = 0.69 Mi.; Granite Block Pavt. . . . = 0.05 Mi.; Misc. Work = 0.07 Mi.; Viaduct Comp. Plate Girders 1566.8'	$320,000 Plans $20	$5,863,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

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The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

Bids: March 10, 1958

Youth Center Building

Sealed proposals for Building, Mechanical, and Electrical Work for the Youth Center Building, Dearborn Civic Center, Dearborn, Michigan, will be received by the City of Dearborn, Michigan, at the office of the City Clerk in the Municipal Building, Michigan Avenue and Schaefer Road, until 2:00 P.M. March 10, 1958 and will immediately thereafter be publicly opened and read aloud.

One award will be made for building, mechanical, and electrical work.

The contract documents are on file and may be examined at the office of the Architects and Engineers during business hours. Copies of the documents may be obtained by depositing at the Architects and Engineer's office cash or check in the amount of $30.00, which amount will be refunded if the complete documents are returned in good condition within 10 days after the opening of bids.

Proposals must be submitted in the form provided therefor by the Architects and Engineers. A certified check or a cashier's check payable to the City of Dearborn, Michigan, in an amount not less than 5 percent of the base bid, shall be submitted with each proposal, subject to the conditions set forth in the Instructions to Bidders.

The accepted bidder will be required to execute performance and lien bonds, each for the full amount of the contract.

No proposal may be withdrawn for at least 60 days after the scheduled closing time for receipt of proposals.

The City of Dearborn reserves the right to waive any informality in any bid, or to reject any or all bids, in whole or in part, should it be deemed for its best interests so to do.

CITY OF DEARBORN, MICHIGAN
JOSEPH CARDINAL
City Clerk

Harley, Ellington & Day,
Architects and Engineers
153 E. Elizabeth St.
Detroit 1, Michigan

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: March 18, 1958.

Sewage Treatment Project of The Hopewell Township Authority Beaver County, Pennsylvania

Sealed proposals will be received at the office of the Secretary of the Hopewell Township Authority, Municipal Building, Hopewell Township, Beaver County, Pennsylvania until 7:30 P.M., E.S.T. Mar. 18, 1958, and will be publicly opened and read shortly thereafter in the Municipal Building, for furnishing all necessary labor, material and equipment and performing all work for the construction noted below.

Proposals will be received from five (5) separate parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certificate check payable to the Hopewell Township Authority or a bid bond in an amount not less than ten (10) per cent of the total bid in accordance with the provisions of the Contract Documents.

Copies of the Contract Documents including the Drawings and Specifications will be on file for inspection purposes at the offices of Gannett Fleming Corddry and Carpenter, Inc., 5823 Penn Avenue, Pittsburgh 6, Pennsylvania, and 600 North Second Street, Harrisburg, Pennsylvania, and also at the office of the Secretary of Hopewell Township in the Municipal Building, Hopewell Township, Beaver County, Pennsylvania.

Copies of the Contract Documents, including Drawings and Specifications, not to exceed two (2) sets of any particular Contract to a prospective bidder, may be obtained only from the office of Gannett Fleming Corddry and Carpenter, Inc., that is located at 5823 Penn Ave., Pittsburgh, Pa. (P.O. Box 5073, Pittsburgh 6, Pa.), upon deposit of the following stated amounts for each set:

Contract One
CONSTRUCTION OF A SEWERAGE SYSTEM $50.00

Contract Two
GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT, ROADS AND APPURTENANCES $25.00

Contract Three
PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT $25.00

Contract Four
HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT $20.00

Contract Five
ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT $20.00

Full refund will be made only to actual bidders on the five (5) contracts noted above, for return of one (1), no more, of each set in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) per cent of the deposit.

Gannett Fleming Corddry and Carpenter, Inc., Engineers,
5823 Penn Avenue
Post Office Box 5073
Pittsburgh 6, Pennsylvania

HOPEWELL TOWNSHIP AUTHORITY
Municipal Building
Hopewell Township,
Beaver County, Pennsylvania

U. S. Government

GOVERNMENT OF DISTRICT OF COLUMBIA, DEPT. SANITARY ENGINEERING, FEBRUARY 3, 1958: SEALED PROPOSALS will be received in Room 404, 499 Pennsylvania Avenue, N.W., Washington 1, D. C., until 2 PM, EST, March 17, 1958; and then publicly opened and read for construction of TRUNK WATERMAINS, 72" LOW SERVICE—Dalecarlia Reservation, 48" First High—from Dalecarlia to MacArthur Boulevard and Elliot Place, N.W., consist. of 220 lin. ft. 72"; 13,700 lin. ft. 48"; and 60 lin. ft. 30" dia. watermain. Proposal forms, plans and specns. obtainable from Supervisor, Bid & Contract Section, Procurement Office, D. C., Rm. 404, 499 Pennsylvania Avenue, N.W., upon deposit of a certified check for $50.00 per set, payable to Collector of Taxes, D. C. (Tel. NA 8-6000, Ext. 2378).

OFFICIAL PROPOSALS

Bids: February 27, 1958

Soil Explorations and Foundation Investigations

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time, on February 27, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON KINGSTON BYPASS, WEST APPROACH TO THE KINGSTON-RHINECLIFF BRIDGE, HC 4413, ULSTER COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM 119.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contract, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. K. G. Rauer, District Engineer, New York State Department of Public Works, Pleasant Valley Road, Poughkeepsie, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $36,000.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF
PUBLIC WORKS

Bids: March 11, 1958

Contract BP-160.013

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
NEW PIER 10
PIER SHED
PAVING AND UTILITIES

Sealed proposals for the construction of a pier shed, including paving and utilities therefor, exclusive of foundations and structural steel for said pier shed, on New Pier 10 under construction at the Brooklyn-Port Authority Piers, Brooklyn, New York, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 11, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, February 20, 1958

OFFICIAL PROPOSALS

Bids: March 4, 1958.

Power Authority of the State of New York Advertisement for Proposals

FOR THE
CONSTRUCTION OF THE
CONSTRUCTION POWER
FACILITIES OF THE
NIAGARA POWER PROJECT
IN
LEWISTON, NIAGARA COUNTY
NEW YORK
SPECIFICATIONS NO. PA-N-25036
CONTRACT NO. N4

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the complete installation of the Construction Power Facilities until 10:30 A.M. Eastern Standard Time on the 4th day of March, 1958, at the Authority's Office, 18th floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated:

Construction of the substation.

Moving and installation of 2- 10,000 kva, 115-13.8 kv, 3 phase power transformers.

Installation of 15 kv metalclad outdoor switchgear.

Installation of 115 kv lightning arresters, disconnecting switches and current transformers.

The work shall be completed on or before June 1, 1958.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars for initial set of contract documents, and Five ($5.00) dollars for each additional set, no part of which will be refunded. Plans, specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in the amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5022) will be received at Culver, Oregon until 2 p.m. Pacific Time March 18, 1958, for furnishing labor and materials for Wasco Dam, Wapinitia Project, Oregon. Location 35 miles west of Maupin, Oregon, in Wasco County. Principal items are 91,000 cu. yds. excavation; 45,000 cu. yds. dam embankment; 515 cu. yds. concrete; and other work. Completion time 500 days. For particulars, address Bureau of Reclamation, Jerichol Lane, Culver, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

CONTRACTORS
WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: February 27, 1958

Soil Explorations and Foundation Investigations

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time, on February 27, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON PROSPECT EXPRESSWAY, FORT HAMILTON PARKWAY INTERCHANGE, HC 4215, KINGS COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM 121.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, N. Y.

(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $14,000.00.

OFFICIAL PROPOSALS

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: March 6, 1958

The Port of New York Authority 3022 Feet Conveyor Belting Port Authority Grain Terminal Proposal No. 1202

Sealed proposals for supplying 3022 feet of conveyor belting for The Port Authority Grain Terminal will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, N. Y. until 11:00 A.M., (E.S.T.), Thursday, March 6, 1958, at which time and place proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Services.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, February 20, 1958

OFFICIAL PROPOSALS

Bids: February 25th, 1958.

Contracts TN-10C and TN-10D

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Tuesday, February 25, 1958

For Throgs Neck Bridge Contract No. TN-10C, Steel Superstructure—Bronx Approach, Borough of The Bronx in The City of New York. The bid must be accompanied by a deposit in the amount of $250,000.00, and

For Throgs Neck Bridge Contract No. TN-10D, Steel Superstructure—Queens Approach, Borough of Queens in The City of New York. The bid must be accompanied by a deposit in the amount of $250,000.00.

Bidders may submit bid for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $50.00, which will not be refunded.

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

EMPLOYMENT OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No., Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Graduate Civil Engineer or Architect for permanent position with long-established national organization. Technical and promotional work; cover Pennsylvania. Car furnished. Summary should include experience, education, salary requirement, etc. P-7194, Engineering News-Record.

Estimator—Cost Engineer—experienced in highway, structures desirable. Permanent position with medium sized growing Ohio General Contractor. P-7267, Engineering News-Record.

General Superintendent—Young, fast growing Westchester General Contractor has once in a lifetime opportunity. If you're 30 to 45, can handle subs, push supers, bring jobs in on schedule and are cost conscious; if you've done public works, commercial and industrial buildings, you are our man. Permanent. Salary plus. P-7245, Engineering News-Record.

Help Wanted: Ontario County. Assistant Engineer, $4900.00. Also, Engineering Aide, $3600.00. These exams. open to eligibles nationwide. Exams. March 22, 1958. Last date for filing applications Feb. 28, 1958. Applications and further information available at office of Civil Service Commission, Court House, Canandaigua, New York.

Designers, Bridge and Highway—3 years experience in Consultant's Office. Send resume P.O. Box 752, Providence, R. I.

The City of Coatesville, Pennsylvania, desires the services of an engineer to assist the City Engineer. The position will lead, possible in 1959, to City Engineer. If interested, please address Director Louis Apfelbaum, Esq., Department of Streets and Public Improvements, National Bank of Chester Valley Building, Coatesville, Pennsylvania.

Englacer-Estimator: Northwestern Ohio and Southern Michigan. Bridges, concrete, piling, excavating sewers. Ability to supervise work desirable, but not essential. Salary plus job bonus. Small organization, but opportunity as large as you make it. P-7079, Engineering News-Record.

POSITIONS VACANT

Construction Man Wanted. Sixty year old well-known construction and engineering corporation operating in central New York desires to locate a thoroughly qualified all-around construction man who is able to prove himself and is qualified to become a fourth partner within one year. No capital is necessary but must be immediately responsible and good at supervision, subcontracts, estimating, expediting, cost-keeping, record-keeping, etc. Initial position will be to take over most of such detail work now being handled by President. Must be around 35 years old and a graduate civil engineer. P-7289, Engineering News-Record.

Wanted: Assistant Project Irrigation Manager for 60,000 acre project, capable of taking over management in six months to a year. Qualifications: Graduate C.E. Engineer or experience equivalent; experience in construction, design, operation and maintenance or irrigation works, hydraulic and electric pumping plants, heavy maintenance equipment and familiar with Irrigation District and Bureau of Reclamation policies. For application forms and further information contact the Board of Control, Lower Yellowstone Irrigation Project, 124 West Main, Sidney, Montana.

Wanted—Centrifugal Pump Designer and Engineer to develop new line of products. Small company located middle Atlantic states. Give full particulars and experience first letter and expected salary. P-7324, Engineering News-Record.

Wanted—Prestressed Concrete Engineer. Experience in design, production and sales promotion preferred. Facilities are in process of construction, and as a subsidiary of large corporation, will expand with the market. Send experience resume references, starting salary and availability for a personal interview. P-7292, Engineering News-Record.

Director of Engineering—Large Los Angeles Architecture—Engineering firm is looking for a top man to head its Engineering Division. Applicants should have had experience on major commercial and industrial buildings and have held administrative positions dealing with top level client representatives. College graduation and professional registration are mandatory. This is an outstanding firm which offers excellent growth potential plus very attractive financial remuneration including stock ownership and profit sharing. Please send resume including education, work history and salary requirements to P-7326, Engineering News-Record.

POSITIONS VACANT

Civil Engineer with field experience on concrete structures, grouting, foundations, concrete design and estimating. Frequent travel. Nationwide contractor. P-7309, Engineering News-Record.

Opportunity for young Civil Engineer with actual experience in highway engineering. Career connection with National Organization having continuing interest in highway engineering, research, and construction. Give full details first letter. P-7291, Engineering News-Record.

Village Engineer, capable of directing Public Works for Village of Monona. Population 7000. Must be Registered Engineer. Salary Open. Apply: Village Administrator, Village of Monona, 5211 Schluter Road, Madison 4, Wisconsin.

Engineer-Structural Steel Sales Promotion we are searching for a structural engineer, between 30 and 45, to handle technical and promotional work with customers of the structural steel fabricating industry. Headquarters will be in Detroit, Michigan. Some travel required through Michigan and Ohio. Applicants should have a B.S. in C.E., and preferably be registered. Experience in steel design and construction desirable. Salary open depending on experience. Insurance and retirement plans available. Send complete resume, recent photo if available, and salary requirements by mail to American Institute of Steel Construction, 101 Park Avenue, New York 17, New York.

Highway Field Engineers, two needed for route survey, one capable of supervision multiple parties. Specific experience State Highway work in this capacity is essential. Other experience and ability in highway and municipal engineering design are highly desirable. Write giving resume, references, salary desired and date available. Arthur W. Gillespie, Box 51, Birmingham, Mich.

Chief Structural Engineer—Leading Los Angeles Architectural—Engineering firm has outstanding opportunity for Registered Professional Engineer with at least ten years experience on large commercial and industrial buildings. Administrative as well as technical ability required. Ability to deal with top level client representatives is important. This is a stable, expanding firm which recognizes individual merit. Outstanding employee benefit program. Write, giving education background, work history and salary requirements to P-7332, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y. March 6th issue closes February 24th

CONSTRUCTION ENGINEERS

Foreign Employment

Career opportunities for graduate chemical or mechanical engineers in Saudi-Arabia. Minimum 5 years experience supervising construction of industrial buildings, oil processing and handling facilities. To supervise actual construction by contract or service organization personnel involving control over construction methods, scheduling, expediting and progress; utilization of men and materials; and the inspection of workmanship for compliance with plans and specifications. Liberal salary plus all-inclusive benefits conducive to large savings. Excellent community facilities.

Write outlining personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 264

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

SUPERINTENDENT

General Contractor will add to expanding organization man qualified for large projects run independently of main office. Should be thoroughly experienced in both field supervision and estimating to handle smaller jobs, as is sometimes necessary, with minimum of field help. Man wanted is not the "Project Manager" type, but one not afraid of the hard work required to meet costs on lump sum contracts. Well paid and continuous employment. Work generally in Eastern half of this country. Give full resume in reply, particularly records of cost and schedule compliance.

Blount Brothers Construction Company

P. O. Box 949 Montgomery, Alabama

WANTED
CONSTRUCTION EXECUTIVE

to represent American contractor in Spanish speaking countries. Must be of Spanish —South American origin, with a wide background of experience in heavy construction work. Write giving complete experience record and qualifications.

Personnel Director
Perini Corp.
Framingham, Mass.

ENGINEERS DESIGNERS

McKee has permanent openings at their Cleveland, Ohio, offices for men with at least 3 years' experience in any of the following:

Oil Refineries
Blast Furnaces
Steel Mills
Industrial Plants

In the following categories:

Piping Checkers
Process Piping
Piping Layout
Concrete
Structural
Electrical
Mechanical
Pressure Vessel
Mechanical Equipment
Specifications
Instrumentation
Estimators

Broad diversification of work in our 3 engineering divisions assures you security of employment.

Send detailed resume to
G. VICTOR HOPKINS

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio

(Continued from preceding page)

EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 47 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

POSITIONS WANTED

Superintendent or Estimator thoroughly experienced and qualified to handle all phases of job from bid to completion: Sewage and Water Treatment Plants, Power Plants, Building Const., Bridges, Foundations, Cofferdams, Piling, Reinforced Concrete. PW-7010, Engineering News-Record.

Canadian Consulting Engineer, civil, seeks short term foreign jobs. Salary or fee basis. PW-7025, Engineering News-Record.

Construction Executive, 30 years experience in all phases of industrial and heavy construction. Power plants, chemical plants, refineries, mechanical installations and piping, buildings, locks, dams, foundations, and tunnels. Interested in connection with aggressive company doing competitive contracting and promotional sales work. Contract negotiations, estimating and pricing accurate. Personal industrial contacts. Top labor relations with all crafts. Primary education M.E. Reply PW-7158, Engineering News-Record.

Wanted by Construction Supt. work. All types of work, roads, bridges etc. In Southern New England. Available now. PW-7165, Engineering News-Record.

POSITIONS WANTED

Purchasing—Broad experience heavy construction and general contracting procurement. Excellent administrative experience with competitive bidding and sub-contractors. Relocate own expense. PW-7138, Engineering News-Record.

Soils and materials engineer, 39, single, highly qualified, over eight years office & field experience. M.S. (Soil Mech.) & M.S. (Highwy. Engg.), special experience in soils and foundations. Regd. P.E. Present emoluments about $10,000 annual. Available April, any location. PW-7217, Engineering News-Record.

Dredging Engineer. All phases for port, harbor, channel and river work. Layout, design, supervision, operation, hydro and land surveys, inspection. Individual services or with supporting personnel. Will contract for work anywhere in world. John Huston, Corpus Christi, Texas. TUlip 3-1201, TErminal 5-0742.

Construction Manager, graduate civil engineer, age 51, qualified for supervision all phases of heavy construction; currently completing multi-million dollar Government project, Pacific Northwest. Available April 1st, location immaterial, resume on request. PW-7224, Engineering News-Record.

Consulting Civil-Hydraulic-Irrigation — and Drainage Engineer available for foreign assignments varying from one month to six months duration. Professional Record-Rates of Pay and References Furnished to Interested Clients. PW-7241, Engineering News-Record.

Superintendent — Highway construction, grading, bridges and pavement. Complete charge of projects. Reply PW-7269, Engineering News-Record.

Architectural civil spec. writer inspector, graduate engineer, ten years experience. PW-7272, Engineering News-Record.

Construction Manager: 15 years sound experience. Exec. Ability. Engineering and Field Supervision, Estimating, Expediting. Industrial and Power Plant Building Construction and Mechanical Installations from customer contact to completion of projects. Desire permanent connection with Engineering and Construction Firm or expanding Utility. PW-7263, Engineering News-Record.

Senior Structural Engineer, Estimator, Spec. Writer. Thorough supervisory experience leading engineering & const. firms. Power plants, large industrials, waterfront structures, dams, airfields, bridges, etc. Permanent position wanted. M. Atl. or N.E. PW-7278, Engineering News-Record.

Construction Supt. General Constr. PW-7186, Engineering News-Record.

Construction Superintendent now employed desires job with general contractor on estimating, sub-contractors, shop drawings, scheduling, costs, etc. PW-7034, Engineering News-Record.

Civil Engineer, Surveyor, Computor, Chief of Party, New Jersey registration, 20 yrs. highway, sewers, water lines, industrial & real estate developments. Will travel. PW-7312, Engineering News-Record.

Carpenter-Gen. Forman-Asst. Supt. 15 yrs. exp. Bridges, Buildings. Now available. Will Relocate. PW-7316, Engineering News-Record.

Const. Acct. Off. Mgr. P.A., 6 yrs exp in heavy industrial const. PW-7293, Engineering News-Record.

(Continued on page 126)

STRUCTURAL
ENGINEERS
DESIGNERS
DRAFTSMEN

Prefer several years or more experience in any of these fields:

BRIDGES

BUILDINGS
EXPRESSWAYS
HYDRO PROJECTS
TEST FACILITIES*

Will consider lesser experience with good educational background, including several recent graduates to round out a planned expansion program. Occasional openings for combination field men. These are permanent additions to our regular staffs.

We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual character—for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

Immediate openings in our St. Louis general offices and occasionally in our San Francisco branch office. Confidential interviews can also be obtained at Washington, D.C., and Portland, Oregon.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.

ENGINEERS — ARCHITECTS

915 Olive St. Louis 1, Mo.

*We are designers of the technical facilities for the Arnold Engineering Development Center, operated by our subsidiary, ARO, Inc.

CIVIL ENGINEERS
SURVEYORS
for work in SOUTHEAST ASIA

Personnel needed to complete technical party. Work involves design and supervision of construction of highways and bridges in South Vietnam. Duties include instruction of one-the-job trainees. High degree of initiative, judgment and skill in handling human relations required in addition to professional competence. All personnel must be experienced and able to provide references. Eighteen-month minimum employment agreement. Dependents not authorized to accompany field personnel. Only those interested in difficult and challenging work should apply. The following positions are open:

Highway Construction Engineers (Field)—Must also have experience in design and location.

Senior Highway Design Engineers—Minimum ten years experience in highway location and design. Some field experience desirable.

Jr. Highway Design Engineers—Same as above with minimum two years experience.

Senior Bridge Engineer—Qualified to make final decisions on all phases of bridge design. Minimum ten years experience.

Bridge Engineer—Minimum four years experience in bridge design. Some field experience desirable.

Soils Engineers—Should be fully qualified to initiate and maintain materials testing program on above project.

Party Chiefs (Field)—Must have some knowledge of design, and experience in both location and construction layout.

Instrumentmen (Field)—Fully qualified to operate and maintain usual surveying instruments without supervision.

Draftsmen—Fully qualified in the field of highway and bridge drafting.

For Application Blank Write to:

CAPITOL ENGINEERING CORPORATION
Consulting Engineers
Dillsburg, Pennsylvania

DEPUTY RESIDENT ENGINEER

For a $40 million rockfill and concrete dam in Iraq. Two-year contract; approximately 3-year completion schedule. Family housing at site, but no local educational facilities for children. Fill type dam construction experience required—preferably rockfill. Must be fully capable of assuming duties of Resident Engineer as required. Position is available immediately. Excellent salary. Please send complete personal and experience record to Hugo O. Niemi, Personnel Manager.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6

ESTIMATOR WANTED
GENERAL CONSTRUCTION

Must be familiar with take-off, pricing, purchasing, subcontracts. Excellent opportunity. General Contractor located near Chicago. Reply fully covering experience, personal data, and salary requirements.

Write: P-7254—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ASSISTANT SUPERINTENDENTS OR FOREMEN

Two or three assistant superintendents or foremen required for company in midwest. Must have engineering background capable of maintaining precise construction records and handle group of thirty men. Mostly transmission line work. Must be good pushers for work in field and have good construction and engineering background. Top opportunity with large company. Permanent salary to $10,000 for right party. Reply with full details to:

P-7248, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
for
HIGHWAY PROJECT
ALBANY AREA

Highly qualified, experienced, Office and Field Engineers

Write full qualification details, personal information references and salary. Interviews arranged promptly.

L. D. STEPHENSON
PROJECT ENGINEER
Frankland and Lienhard
P. O. Box 956
Latham, New York

CIVIL ENGINEER
(SANITARY)

Overseas position for Sanitary Engineer with minimum 15 years experience in design and construction of municipal waterworks and sewage treatment facilities. Age 45 to 65. To act as consultant to foreign government reviewing designs for proposed municipal projects. Good living conditions, substantial salary and quarters allowance.

The J. G. White Engineering Corp.,
80 Broad Street New York 4.

AVAILABLE
PRESTRESSING EXEC.-ENGINEER

Plant manager in full charge of production, scheduling, estimating, bidding, contract negotiations, erection. Complete design and construction of beds, tensioning eqpt., materials handling, batching, heating and all associated equipment. Design and development of products and production methods.

BSCE, MSCE. Licensed, experienced in sales and sales promotion, product development, bridge design and construction.

PW-7229—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED
(Continued from page 124)

Construction Superintendent. 22 years experience, full supervision of highways, dams, and heavy industrial. Exceptional experience in bridges, steel mills, and rotary kiln plants. Twelve years with present employer. Excellent references. Age, 47. Health, good. Go anywhere. PW-7323, Engineering News-Record.

Qualified superintendent, structures, excavation or sewer, foreign or stateside. Best of references, reliable, available now. PW-7294, Engineering News-Record.

Resident Engineer or Superintendent. Experienced on all types of construction and in general estimating. Including highways, bridges, commercial buildings and power plants. PW-7295, Engineering News-Record.

Full charge, double entry, cost construction Bookkeeper, over 15 years experience. Salary $100. PW-7305, Engineering News-Record.

Superviser. Pipe Installation. Construction. Refineries, Chemical, Power Plants. Local, Foreign. PW-7306, Engineering News-Record.

Field Office Manager—Age 36, 15 yrs experience Accounting, Taxes, Costs, Payroll, Timekeeping, Auditing. Domestic or Foreign, Available at once. PW-7307, Engineering News-Record.

Mechanical Supt., asst. Job Supt. Industrial, Chemical, Power Plants, Refineries. Age 42—South, Southwest, Foreign. PW-7300, Engineering News-Record.

Resident Engineer, Thruway Construction and highway design supervision. Age 35. Presently in finals of $4 million superhighway contract. Available April, go anywhere States or foreign with following of office help, party chief, inspectors, soils man. PW-7320, Engineering News-Record.

Sales Manager, 45, Construction Equip. making change from national industrial wheel and crawler manufacturer. Twelve yrs. experience earth moving equip. sales management both manufacturer and dealer level. Will consider either opportunity. Univ. degree, best references, will relocate. PW-7325, Engineering News-Record.

Registered Professional Mechanical Engineer —BSME: MSME: ME Degrees—Age 36—12 years diversified experience in Process and utilities for Industrial Plants with Design, Supervisory, Administrative and Field duties and overseas experience and languages. Presently employed as Senior Engineer by a leading company seeks long range or permanent overseas or South American position with Europe preferred. PW-7334, Engineering News-Record.

Chief Draftsman—Structural Stl. Fab. Co., heavy & light str. exp. desires similar or chief eng. position with established co. PW-7333, Engineering News-Record.

SELLING OPPORTUNITY WANTED

Sales Engineer; graduate; age 27; experienced selling pre-fabricated buildings seeks position similar field; South preferred. RA-7270, Engineering News-Record.

WORK WANTED

Surveying field parties experienced, fully equipped. Contract or per diem, licensed. WW-7196, Engineering News-Record.

DON'T FORGET THE BOX NUMBER

SEARCHLIGHT SECTION
(Classified Advertising)

BUSINESS OPPORTUNITIES — **EQUIPMENT USED or RESALE**

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

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Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. March 6th issue closes February 24th

Engineers—Foremen—Office Men
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

• FIELD OFFICES •
Looking forward to bigger profits??? Use modern and efficient working quarters for key personnel such as engineers, supervisors, etc. NEW OR USED SHELLS FOR SALE OR LEASE. Write for information:
ANDY'S TRAILER SALES
1760 Westover Rd. • Chicopee Falls, Mass.

FOR RENT
3900 MANITOWOC LIFTCRANE
Only 9 months old—in excellent condition—70 ton capacity—160 foot boom—30 foot jib—torque converter and manual control—located in western Pennsylvania—will move anywhere on long term lease.
STANDARD STEEL SERVICE, INC.
P. O. Box 929, Johnstown, Pa.
Phone 37-8451 or 37-7901

FOR SALE *(Reasonable)*
3—CAT D-8 Cable-Dozers
— MUST SELL —
THE EARLE EQUIPMENT CO.
6341 Tireman Ave., Detroit 4, Mich.

HOIST & TOWER For Sale
American 3 drum hoist with Archer H. D. double well, 3 barrow cages & complete concrete equipment for sale.
ARROW CONTRACTORS EQUIPMENT CO.
4646 S. Kedzie Ave. Chicago 32, Ill.

FOR SALE
2 1956 Autocar
2 1955 Macks
Diesel Tandem Dumpers
NORTHEAST COASTAL INC.
114-12 Atlantic Ave. Richmond Hill, N. Y.
Vi 9-1176

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

Watch—
the *Searchlight Section*
for
Equipment Opportunities

ELECTRONIC COMPUTATIONS
Bendix G-15 computer available on service bureau basis for engineering computations.
- Earth work, traverses, highway geometrics
- Stress analysis, bridge design
- Hydraulics
- Traffic analysis

Programming available for other applications. For full information write to:
H. W. LOCHNER INC.
COMPUTER DIV.
20 N. Wacker Drive Chicago 6, Illinois
FRanklin 2-7346

FOR SALE OR RENT
40 ton American Diesel Loco. Crane
65 ton Whitcomb Diesel Elec. Loco.
44 ton Whitcomb Diesel Elec. Loco.
25 ton Davenport Gas-Elec. Loco.
50 ton Amer. Guy Derrick, 115' Mast, 100' Bm.
90 HP Lidgerwood 2d Diesel Hoist w/Swinger
150 HP Amer. #140 3d Gas Hoist & Swinger
1½ yd. Lima 602 Diesel Crane. 110' Boom.
60 ton Manitowoc 3900 Erection Crane. 140' Bm.
110 HP Clayton Port. Steam Generator
WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

LOW COST INSTALLATION AND OPERATION
CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 to 20 TONS
SELL, RENT OR BUY
FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS
FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION
AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

NEW AND REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

FOR SALE
8" DREDGE
18' x 35' hull, Georgia pump, G. M. 6-71 and G. M. 2-71, 500' of pipe, excellent condition.
COAST DREDGING CORP.
Box 22 *Phone AXtel 6-2479* Tuckerton, N. J.

SHEET PILING
WALL FORMS — SHOVEL FRONTS
FOR SALE: Approx., 19,000 sq. ft. of new Bethlehem AP-3 sheet piling; chiefly in 20 and 30 ft. lengths—35,000 sq. ft. used steel concrete wall forms, excellent condition. Two 1¼ yard shovel fronts for Bay City Crane.
P. O. Box 402,
Barre, Vermont

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8"	BP	36#
10"	BP	42#
12"	BP	53#
14"	BP	73#
14"	BP	89#
14"	BP	102#
14"	BP	117#

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN
STEEL CORPORATION
52-25 2nd Street
Long Island City, N. Y.
Phone: RAvenswood 9-1262

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USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NLR 82.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

ALL MAKES
RE-BUILT REPAIRS RENT REAL EXPERTS
BUFF

69 Day St., New York WOrth 2-2797

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

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Midwest Representatives: W. & L. E. Gurley, Distributors—Filotenica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

EQUIPMENT FOR SALE:

	Sale Price
Blaw-Knox Paving Spreader, S/N 56-SD-3, Set for 25', With QXD5 Hercules Engine	$9,500.
Koehring Longitudinal Float, Set for 25', With Model AHH Wisconsin Engine; 6 Rubber Wheels, 6 Flange Wheels	3,500.
Maginnis Hi-Lectric Frame Assembly, Including Four Model HPV-3 Hi-Lectric Full Slab Paving Vibrators (New & Slightly Used); T-38 Spare Parts Kit	990.
1200 Lin. Ft. 10" x 10" x ¼" Blaw-Knox Self-Aligning Road Forms with 24" Stakes	2,400.
Cleveland Formgrader Single Finishing Bridge, Adjustable for 20' to 25' Road Width—Slightly Used	200.
Cleveland Formgrader Joint Finishing Bridge, Adjustable for 20' to 25'—Slightly Used	375.
Vibratory Screed, Master, Type 2414, Model AVS-20, S/N CES-33; Gasoline Engine—New Condition	600.
TD-14A Bulldozer, Diesel Crawler Tractor, S/N TDF-28027, Bucyrus Erie Bullgrader—Good Condition	4,500.
255A P&H Shovel, ¾ yard, Diesel International UD-14A Crawler Tractor; Clamshell and Dragline Attachments; 35' Boom with four 10' Inserts and Boom Backstop—	16,000.
Payloader, Model HF Hough, S/N 83226, with ¾ yard Bucket, Wain-Roy Backhoe Modedl H-200	5,500.
Rome Motor Grader, Diesel, Model 403, S/N 1361	1,900.
Allis-Chalmers Motor Grader, Model AD-4, S/N 2627, GMC Diesel Motor #4A937	2,900.
Heil Pan, Cable Controlled Scraper with Standard Equipment—8 to 10 cu. yd. capacity	1,000.
Galion Ten-Ton Roller, Three Wheel Gasoline—Good Cond. little wear	2,900.
Two Wellpoint Pumps "Little Giant", with Model VP-4 Wisconsin Gas Engines; Attachments. Pumps in nearly new cond.; New Cost with Attachments $10,000	$6,000.
Concrete Saw, Clipper Model C-250-9, with 25 H.P. Gas Engine—	1,300.
Everready Brick Saw, Model D.W., S/N 41-39, with Century Electric Motor 115-230 Volt, 1750 RPM, 60 Cycle, 1½ HP, S/N 8J2	300.
Band Saw 20", complete with One H.P. Leland Electric Motor	250.
Hoist, A.H. & D. Double Drum, S/N 24405, Model HUA Minn. Moline Gas Engine #71075	2,500.
General Purpose Hoist, Model 25, S/N 21780, 2500# Drum, 180 FPM; Mfgd. by Amer. H & D. Co.; Tower 70' in 10 ft. sections; Platform 6' x 6'; Wisc. Engine	1,000.
Tubular Tower, 78', Heavy Duty; Including Base, Two-Sheave Cathead, Bottom Swivel and Safety Device; Steel Cage—Used 3 mos.	1,500.
Muller Mortar Mixer, 3 c.f., S/N 9616, with Briggs & Stratton Engine	200.

Office:
IRONS & REYNOLDS, INC.
1724 H Street, N. W. Washington 6, D. C.
Phone: STerling 3-2233

Yard:
Clinton, Maryland
Phone: CYpress 7-8888

FOR SALE
STEEL BRIDGE

60' span, 15' width, treadway girders, truss, pins, etc., dismountable type. Purchased U.S. surplus. Cost govt. over $60,000.00. Weight approx. 100 tons. Location Washington, D. C. Ideal for detours, new developments, etc. Will take fraction of original cost.

FRANK TESTA
P. O. Box 36 Bedford, Ohio
BEdford 2-5151

FOR SALE
Complete ASPHALT SPREAD

1 Used Barber-Greene 848 continuous mix asphalt plant oil and gas burners, rubber mounted, electric powered, 4-compartment cold feeder, rotary vane fines feeder, hydraulic controlled discharge, asphalt pump. Plant has run total 262,000 tons since new, excellent maintenance. Has had all modifications and repairs, cleaned and painted. Condition excellent. Ready to go to work.
2 Used Barber-Greene 879-A laydown machines
1 New Bros HO-15 automatic hot oil heater
1 New Buffalo-Springfield 5 to 8 ton tandem roller
1 Used Tampo self-propelled pneumatic roller (300 hours)
2 New 10,000 gallon asphalt storage tanks
F.O.B. Cars Tulsa, Oklahoma $99,800.00
This spread sells new for approximately $205,000.00 WILL SELL ALL OR ANY PART

SUPER PUSH TRACTOR

1 Used LeTourneau-Westinghouse Twin C pusher; powered with 2GM 6-71 Diesels (416 HP); mounted on 4-29.5 x 29 tires; 2 power shift transmissions w/torque converters, weight 81,000#; the most powerful pusher in use today.
F.O.B. Cars Okla. City, Oklahoma $26,500.00
Sells new for approximately $51,000.00.

B TOURNAPULL

1 Used LeTourneau-Westinghouse Model B tournapull 18 yd. to 25 yd. scraper; 300 HP HBIS 600 Cummins Diesel; mounted on 4-27:00 x 33-30-ply tires. Good Condition
F.O.B. Cars Okla. City, Oklahoma $29,800.00
Sells new for approximately $54,000.00

C TOURNAPULL

1 Demonstrator LeTourneau-Westinghouse C Tournapull 13 to 18 yd scraper; power shift transmission and torque converter; 200 HP Cummins Diesel; 4-24:00 x 25-24-ply tires; 150 total hours
F.O.B. Cars Okla. City, Oklahoma $33,450.00
Sells new for approximately $41,000.00

Subject to Prior Sale
All Above Equipment in Excellent Condition
Priced to Sell—Inspect and See
Terms to Responsible Parties
Call Wire or Write

WYLIE-STEWART MACHINERY CO., INC.
Box 1985 *Box 3216, Whittier Station*
Tel: REgent: 9-0631 *Tel: WEbster 9-5439*
Okla. City, Okla. *Tulsa, Okla.*

SAW SPECIAL

1—Red Star Multiplex Model 60. 5 HP. 3 ph. 60-cycle, 220/440-v. 30" arm travel. 12" rise. 1" arbor. Bargain—$325.00

1—DeWalt Model G.P.K. 30" arm. 2 HP single phase 115/230-volt. 6" rise. Excellent condition. $225.00

2—14" Clipper masonry saw. 1½ HP electric, 3-ph. 60-cycle, 220/440-volt. Complete with exhaust fan. $200.00 each

1—C.M.C. tilting table power saw. Swinging arbor. 4 cyl. LeRoi Model XP5 gasoline engine.

24" and 36" chain saws—Mall, Disston, Reed-Prentice. Air—electric and gasoline powered.

Write for Stock List No. 456

ECA
EQUIPMENT CORPORATION OF AMERICA

CLIFTON HEIGHTS, PA., Box J-608, Sub. of Phila.
GROVETON, PA., Box 43-J, Sub. of Pittsb.
CHICAGO 4, ILL., 327-J, So. La Salle St.
NEW YORK 7, N. Y., 30-J, Church St.

ATTENTION DIRT MOVERS!!

4—Euclid 23TDT—3 years old—excellent rubber. G. M. 6-110 Engines, Allison Torque Convertors.
2—TS 300 A.C. Scrapers—Overhauled & ready to go.
2—7TDT-14SH Euclid Scrapers—6 wheel Cummins Engines.
3—Mod. "D" Le Tourneau 6 yd Scrapers. G. M. 671 engines. 2 machines have cabs—1 machine overhauled and recapped drive tires.
1—Slightly used 88-1B Parsons Trencher—Rubber tired ladder type machine used 2 mos. $7,500.00. LIKE NEW!
2—HD 20 A.C. Tractors, excellent condition. Straight Dozers.
1—1201 Lima 3½ yd. Dragline and shovel front—TOP SHAPE—$45,000.00.
1—605 Koehring 1½ yd. Dragline—Rebuilt—$27,500.00.
1—Euclid S7—Demonstrator—A real buy, like new, $21,500.00.
1—L41 Lorain ¾ yd. Shovel—Backhoe—Dragline, $14,000.00.

No Reasonable Offer Turned Down

GIL BOERS EQUIPMENT CO.

7625 SO. KEDZIE CHICAGO 29, ILL.

Phone PRospect-6-4000.

CRANES AND SHOVELS

Lorain Model 82, 2 yd. shovel, Cat 13000 Diesel Motor, 70' Drag Boom.
Bucyrus Erie, Model 54B, Serial No. 33068, long tracks. Equipped with Buda Diesel 70' Crane Boom.
Bucyrus Erie, Model 20B, ⅜ yd. hoe and crane combination, 40' crane boom.
Shovel Attachment for 54B.
Lorain 77, Cat 13000, 1½ yd. shovel, Serial No. 5558.
Osgood, Serial No. 4150, Model 105, 1¾ yd. Crane, Cat 13000 Diesel.
Northwest Crane-Dragline, Serial No. 6797, Cat Diesel Motor, Mod D 315 ¾ yd. cap.
Lorain, Model 41, ¾ yd. Crane & Hoe combination, Cat Diesel, Model D 315

TRUCK CRANES

Lorain Wagon Mobile Cranes, self propelled, GM Diesel, 30' Crane boom, Serial No. 19091, ½ yd. capacity.
Bay City Truck Crane, Serial #4163, 15 ton cap factory carrier, 40' crane boom.
Bay City Truck Crane, Serial #4112, 15 ton cap factory carrier, 40' crane boom.
Lorain Truck Crane, Model MC4, Serial 13832, capacity 20 ton, factory carrier.

TRACTOR—DOZERS—GRADERS

D4 Dozer, La Plant Choate, straight blade, Serial No. 7-J-5484W.
D4 Dozer, with 4S cat. blade, Serial 2T5070, low hours, very clean.
D4 Cat 4A2, Angle Dozer, Serial 7N-12563.
D6 LeTourneau, cable blade & double drum winch.
D7 Bulldozer cable blades, 4T series.
D8 Cable Dozer, Serial 8R8272.
D8 Cable Dozer, Serial 8R9400.
H G Model 68, Oliver Tractor.
Cat Model 12 Graders, Serial 9K5742 & 9K7941.

MISCELLANEOUS

Elgin Street Sweeper.
LeTourneau 6 yard scraper, unused.
LeTourneau Model 210 Bottom Dump Wagon with super "C" power unit.
Hossfield Prospecting Drill, new 1956.
Mobile Vertical Drill mounted on Dodge, 6 x 6 factory reconditioned. 40', of 4" Vertical augur. Model B-36.
McCarthy Horizontal Drill, Wisconsin engine, rubber mounted.
Barber Greene Coal Loader, Model 554, Ser 554-48-77 Le Roi gas motor, unused.
Mississippi M.R.S. Bottom Dump Wagons.
Koehring 30' Crane Boom. Model 304.
22B unused Shovel Dipper.
1 yd used Shovel Dipper.
Unused P & H Model 655 Hoe Attachment.
P & H Model 255A 40' Crane Boom.
General ¾ 30' Crane Boom.
2 Rudamatic Taglines, Model 436.
Hobart Welder 300 Amp., Skid mounted.

TESTA BROS., INC.

P. O. Box 36 *BE 2-5151* Bedford, Ohio

FOR SALE
MANITOWOC MODELS 3500 & 3900
Liftcranes
Forsythe Equipment Co., Inc.
37-11 Vernon Blvd.
Long Island City 1, N. Y.

SHOVELS — DRAGS CRANES DRILLS — EUCLIDS

9-W Bucyrus Monighan Elec. Drag, 200', 10 yd.
5150 Bucyrus Monighan Drag, 165', 9 yd.
625 Page Walking Drag, 150', 10 yd.
723 Page Walking Drag, 130', 10 yd.
621-S Page Walking Drag, 135', 6 yd.
2400 Lima Dragline, 130', 5 yd.
5-W Bucyrus Monighan Drag, 120', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
3900 & 3500 Manitowoc Cranes
111-M Marion Dragline, 100', 4 yd.
1055 P&H Dragline, 100', 3½ yd.
54-B Bucyrus Erie Drag, 80', 2½ yd.
170-B Bucyrus Erie 6½ yd. Elec. Shovel
150-B Bucyrus Erie 6 yd. Elec. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
1055 P&H 3½ yd. Standard Shovel
955 P&H 2½ yd. Standard Shovel
80-D Northwest 2½ yd. Standard Shovel
51-B Bucyrus Erie 2 yd. Standard Shovel
38-B Bucyrus Erie 1½ yd. Standard Shovel
Unit 1020 ¾ yard Shovel
Also, various smaller shovels & drags
Truck Cranes—Link Belt, P&H, Bay City
400 Reich Truck Mounted Rotary Air Drill
600 Reich Heavy Truck Mounted Rotary Air Drill
750 Reich Heavy Truck Mounted Rotary Air Drill
Dozers, Scrapers, Graders, Front End Loaders
Euclid Trucks—Rear & Bottom Dump

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

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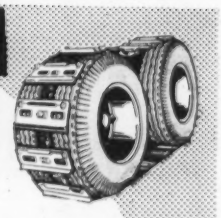

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$240.00 F. O. B. For Single Axle Set
$408.00 F. O. B. For Tandem Axle Set

CONVERT RUBBER TIRE EQUIP. TO CRAWLER PERFORMANCE

SAVE 50%—ACT NOW!

MUD-SNOW-SAND-SWAMPS won't stop you! Flotation is increased 500% and Traction 300%. TRUCK TRACK fits small as well as large size tires. Made of durable drop-forged steel, TRUCK TRACK are interchangeable and are quick and easy to mount.

Send for literature and free estimate.
Thousands of enthusiastic customers.

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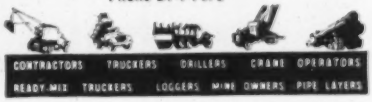

FOR RENT
Manitowoc Cranes

Models 2000-B, 3500 or 3900. 25 to 70 Ton Capacity—50' to 125' booms — 20' or 30' jibs — manual controls — independent booms — torque converters.

McCARRICK BROTHERS, INC.
1700 E. Ridge Pike P. O. Box 291
Norristown, Pa. Phone: Broadway 2-4231

SEARCHLIGHT Equipment Spotting Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment *not currently advertised*. (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads to see if what you want is not currently advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. Y. 36, N. Y.
Please help us locate the following equipment components.

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NAME .....
TITLE .....
COMPANY .....
STREET
CITY 2/20/58

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

DERRICKS

FOR SALE

2—100 TON STIFF-LEGS
1—125 TON STIFF-LEG
2— 45 TON STIFF-LEG
1— 25 TON STIFF-LEG
1— 10 TON STIFF-LEG
2— 5 TON STIFF-LEG
1— 65 TON GUY DERRICK
1—200 TON GUY DERRICK
2—300 TON TWIN POLES
6— HOISTS
Many others

WANTED
2—250 TON GUY DERRICKS WITH 250 HOISTS

NATIONAL EQUIPMENT COMPANY
BLOOMINGTON, INDIANA PHONE 5188

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

RAILROAD Cross and Switch **TIES**

Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

RAILS
NEW — RELAYING — TRACK ACCESSORIES
MIDWEST STEEL CORP.
502 ORTDEN STREET
CHARLESTON, W. VA
IMMEDIATE DELIVERY

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Surplus New & Used
FOR SALE

ALBERT PIPE SUPPLY CO., INC.
PILING • PIPE • CULVERTS • VALVES & FITTINGS
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VALVES and FITTINGS
All Sizes in Stock
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Editorials

No Raiding of Highway Fund!

THERE IS NO QUESTION but that the Congressional leaders who have cried out against any raiding of the Highway Trust Fund are right. The fund was established for the sole purpose of constructing a new system of interstate highways, and it should not be tapped for any other governmental purpose, however laudable. To siphon off money from the fund as now constituted would be nothing less than a breach of faith with the people of the United States—to say nothing of multiple taxation of a special class of citizens.

Immediate reason for the outcry is a proposal in the President's budget message that taxes now levied on aircraft operators for the highway fund be put back into the general funds, presumably to be spent for airport improvements. The total amount thus to be lost to the highway fund is about $68 million.

Admittedly, this is a difficult question to argue. Admittedly, the aircraft operators have a complaint. Why shouldn't their tax money be used to improve their own facilities, rather than those of competing highways. But the highway bill, under which these taxes are assigned, was passed in July 1956—after several years of debate. The aircraft industry seems to be very late in making objections now. Then, too, aircraft operators do benefit from highway work since it is impossible to reach a major U.S. airport excepting by highway.

Those who are proposing use of the fund money for forest and public lands highways are on equally untenable ground when they argue that such roads are "feeders" of the interstate net. All highways are feeders, and would have a claim on the Trust Fund under such a philosophy.

But these kinds of diversions are only a part of what could happen. A year ago, for instance, the Department of Labor was paid $250,000 out of the Highway Trust Fund, to cover its expenses in administering the Davis-Bacon labor laws. If this is proper, then why shouldn't the Treasury—which administers the Trust Fund itself—be paid for its expenses? And why shouldn't Bureau of Public Roads salaries be charged to the fund? And how about Justice Department expenses in connection with the road program? The possibilities of diversion are endless—and frightening.

The Trust Fund now contains over $2.5 billion, and will add up to a total of nearly $28 billion over 16 years. Already it is being recognized that even this large sum will not be sufficient to complete the interstate system on time. So no kinds of diversion should be permitted to occur. The Trust Fund was and is a solemn promise to the public that the road program would be adequately funded and carried out. To divert the money collected for this purpose to any other use is wrong. It must not occur.

Progress in Labor Relations

THE AFL-CIO Building and Construction Trades Department and the National Constructors Association are to be congratulated on reaching agreement on a code of work practices designed to eliminate unnecessary construction labor costs.

Ultimate savings to the public as owners and taxpayers, greater cost stability for contractors, and more jobs for building tradesmen are perhaps the broadest and the most significant of the plan's possible achievements.

But important as these are, they should not overshadow another significant aspect of the agreement. This is that it was completely voluntary, thus upholding the principle of sound labor-management relations, avoiding the dangers of governmental interference, and last, but not least, providing convincing evidence that responsible trade unionism does exist.

Much of the credit for negotiating and concluding the new agreement is due building trades' President Richard Gray, whose statesmanship as a union leader was recently reflected in a wage-freeze proposal, and John F. O'Connell, acting for the NCA. In this new endeavor, both have demonstrated their unusual ability to understand and to adjust often conflicting viewpoints in the interests of a common goal. And in so doing, they have promoted the concept of mutuality of interest among labor, management and the public on which depends the welfare of all three.

Much remains to be done to make the plan effective, and this resolves itself into a problem of education—largely self-education of individual contractors and construction workers at the local level.

In the grass-roots discussions, which must precede any implementation of the code, it is hoped that local unions and contractors will not lose sight of the mutual respect, confidence and understanding of the broad approach that inspired the plan's conception in the first place.

Realistic Planning

AS THE URBANIZATION of the United States continues at an ever-increasing pace, careful, sensible planning becomes more and more important. This means that dream-type plans, which reflect what a planner would like to see a city become, must give way to more realistic concepts.

Actually, it is not the planners, but the business in a city, which shapes its future. Planning must be focused on what business needs in services, transportation, space and the like. Business is the real reason for a city's existence, and planners must start with that premise. Using any other will prove impractical and costly.

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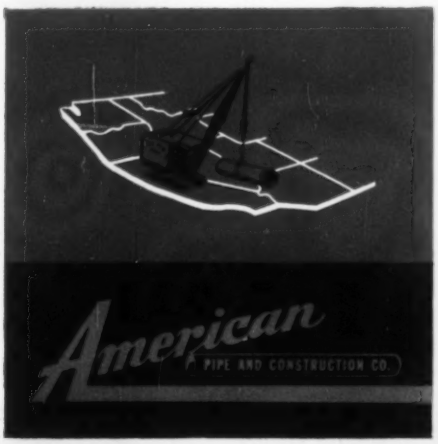

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